



# SEQUENCE LISTING

<110> Microbial Technics limited  
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Hanniffy, Sean B

<120> Proteins

<130> PWC/P21978WO

<140> PCT/GB00/03437

<141> 2000-09-07

<150> GB 9921125.2

<151> 1999-09-07

<160> 276

<170> PatentIn version 3.0

<210> 1

<211> 1641

<212> DNA

<213> Streptococcus agalactiae

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 <213> Streptococcus agalactiae

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Pro	Thr	Gln	Phe	Thr	Leu	Asp	Lys	Gly	Asp	Arg	Ile	Phe	Tyr	Asp	Gln	225	230	235	240
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Gln	Glu	Ala	Ser	Gly	Thr	Leu	Val	Gly	Val	Thr	Gly	Thr	Lys	Val	Thr	370	375	380	
Val	Ala	Gly	Thr	Asn	Ser	Ser	Gln	Glu	Pro	Ile	Glu	Asn	Gly	Leu	Pro	385	390	395	400
Lys	Thr	Gly	Val	Tyr	Asn	Ile	Ile	Gly	Ser	Thr	Glu	Val	Lys	Asn	Glu	405	410	415	
Ala	Lys	Ile	Ser	Ser	Gln	Thr	Gln	Phe	Thr	Leu	Glu	Lys	Gly	Asp	Lys	420	425	430	

Ile Asn Tyr Asp Gln Val Leu Thr Ala Asp Gly Tyr Gln Trp Ile Ser  
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Tyr Lys Ser Tyr Ser Gly Val Arg Arg Tyr Ile Pro Val Lys Lys Leu  
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Thr Thr Ser Ser Glu Lys Ala Lys Asp Glu Ala Thr Lys Pro Thr Ser  
 465 470 475 480

Tyr Pro Asn Leu Pro Lys Thr Gly Thr Tyr Thr Phe Thr Lys Thr Val  
 485 490 495

Asp Val Lys Ser Gln Pro Lys Val Ser Ser Pro Val Glu Phe Asn Phe  
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Gln Lys Gly Glu Lys Ile His Tyr Asp Gln Val Leu Val Val Asp Gly  
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Glu Ile  
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<213> Streptococcus agalactiae

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Asn His Leu Phe Gly Thr Asp Gly Leu Gly Arg Asp Met Phe Val Arg  
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Thr Ile Lys Gly Leu Tyr Phe Ser Leu Gln Val Gly Leu Leu Gly Ala  
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Leu Met Gly Val Ile Leu Ala Thr Val Phe Gly Val Leu Ala Gly Leu  
85 90 95

Gly Asn Ser Ile Ile Asp Lys Ile Ile Ala Trp Leu Val Asp Leu Phe  
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Ile Gly Met Pro His Leu Ile Phe Met Ile Leu Ile Ser Phe Val Val  
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Gly Lys Gly Ala Gln Gly Val Ile Ile Ala Thr Ala Val Thr His Trp  
130 135 140

Pro Ser Leu Ala Arg Leu Ile Arg Asn Glu Val Tyr His Leu Lys Asn  
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Lys Glu Phe Val Gln Leu Ser Lys Ser Met Gly Lys Thr Pro Tyr Tyr  
165 170 175

Ile Val Arg His His Ile Leu Pro Leu Ile Ala Ser Gln Ile Phe Ile  
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Gly Phe Ile Leu Leu Phe Pro His Val Ile Leu His Glu Ala Ser Met  
195 200 205

Thr Phe Leu Gly Phe Gly Leu Ser Ala Glu Gln Pro Ser Val Gly Ile  
210 215 220

Ile Leu Ser Glu Ala Ala Lys His Ile Ser Leu Gly Asn Trp Trp Leu  
225 230 235 240

Val Ile Phe Pro Gly Leu Tyr Leu Ile Leu Val Val Asn Ala Phe Asp  
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Leu Asn Leu Glu Ile Lys Lys Gly Glu Leu Leu Ala Ile Ile Gly Ala  
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Thr Ile Gly Glu Ser Leu Lys Lys Leu Phe Tyr Pro Gln Thr Asp His  
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Phe

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 Leu Asn Leu Glu Ile Lys Lys Gly Glu Leu Leu Ala Ile Ile Gly Ala  
 35 40 45

Ser Gly Ser Gly Lys Ser Leu Leu Ala His Ala Ile Met Asp Ile Leu  
50 55 60

Pro Lys Asn Ala Ser Val Thr Gly Asp Met Ile Tyr Arg Gly Gln Ser  
65 70 75 80

Leu Asn Ser Lys Arg Ile Lys Gln Leu Arg Gly Lys Asp Ile Thr Leu  
85 90 95

Ile Pro Gln Ser Val Asn Tyr Leu Asp Pro Ser Met Lys Val Lys His  
100 105 110

Gln Val Arg Leu Gly Ile Ser Glu Asn Ser Lys Ala Thr Gln Glu Gly  
115 120 125

Leu Phe Gln Gln Phe Gly Leu Lys Glu Ser Asp Gly Asp Leu Asp Pro  
130 135 140

Phe Gln Leu Ser Gly Gly Met Leu Arg Arg Val Leu Phe Thr Thr Cys  
145 150 155 160

Ile Ser Asp Lys Val Ser Leu Ile Ile Ala Asp Glu Pro Thr Pro Gly  
165 170 175

Leu His Pro Asp Ala Leu Gln Met Val Leu Asp Gln Leu Arg Ser Phe  
180 185 190

Ala Asp Lys Gly Ile Ser Val Ile Phe Ile Thr His Asp Ile Val Ala  
195 200 205

Ala Ser Gln Ile Ala Asp Arg Ile Thr Ile Phe Lys Glu Gly Lys Ala  
210 215 220

Ile Glu Thr Ala Pro Ala Ser Phe Phe Ser Gly Asn Gly Glu Gln Leu  
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<212> DNA

<213> Streptococcus agalactiae

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<212> PRT  
<213> Streptococcus agalactiae

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Pro Val Phe Thr Val Ser Ile Leu Gly Ile Ala Asn Val Thr Leu His  
35 40 45  
Thr Arg Thr Lys Met Met Ser Val Leu Ser Ser Glu Tyr Val Leu Phe  
50 55 60  
Ala Arg Ala Arg Gly Glu Thr Glu Trp Gln Ile Phe Lys Asn His Cys  
65 70 75 80  
Leu Arg Asn Ala Ile Val Pro Ala Ile Thr Leu His Phe Ser Tyr Phe  
85 90 95  
Gly Glu Leu Phe Gly Gly Ser Val Leu Ala Glu Gln Val Phe Ser Tyr  
100 105 110  
Pro Gly Leu Gly Ser Thr Leu Thr Glu Ala Gly Leu Lys Ser Asp Thr  
115 120 125  
Pro Leu Leu Leu Ala Ile Val Met Ile Gly Thr Leu Phe Val Phe Ala  
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<213> Streptococcus agalactiae

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Leu Thr Lys Ile Ser Arg Arg Phe Val Trp Met Leu Val Val Ile Tyr
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Cys Leu Ile Ile Val Arg Met Cys Phe Gly Pro Gln Ile Met Ile Glu
          50           55           60

Gly Val Ser Thr Pro Asn Val Gln Arg Phe Gly Arg Ile Val Ala Leu
65           70           75           80

Leu Val Pro Phe Asn Ser Phe Arg Ser Leu Asp Gln Leu Thr Ser Phe
          85           90           95

Lys Glu Ile Phe Trp Val Ile Gly Gln Asn Val Val Asn Ile Leu Leu
          100          105          110

Leu Phe Pro Leu Ile Ile Gly Leu Leu Ser Leu Lys Pro Ser Leu Arg
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Lys Tyr Lys Ser Val Ile Leu Leu Ala Phe Leu Met Ser Leu Phe Ile
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Glu Cys Thr Gln Val Val Leu Asp Ile Leu Ile Asp Ala Asn Arg Val
145          150          155          160

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		20					25					30			
Ile	Ile	Ser	Glu	Thr	Gly	Trp	Asp	Ile	Ser	Ser	Val	Ser	Phe	Ala	Phe
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Ser	Leu	Ala	Ile	Phe	Cys	Leu	Gly	Met	Ser	Ala	Ala	Phe	Met	Gly	His
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Leu	Val	Glu	Arg	Phe	Gly	Pro	Arg	Ile	Met	Gly	Met	Ile	Ser	Ala	Ile
65				70				75				80			
Leu	Tyr	Gly	Ala	Gly	Asn	Val	Leu	Thr	Gly	Leu	Ala	Ile	Glu	Thr	Gln
			85				90					95			
Gln	Leu	Trp	Leu	Leu	Tyr	Val	Ala	Tyr	Gly	Ile	Leu	Gly	Gly	Ile	Gly
		100					105					110			
Leu	Gly	Ser	Gly	Tyr	Ile	Thr	Pro	Val	Ser	Thr	Ile	Ile	Lys	Trp	Phe
	115					120					125				
Pro	Asp	Arg	Arg	Gly	Leu	Ala	Thr	Gly	Phe	Ala	Ile	Met	Gly	Phe	Gly
	130				135						140				
Phe	Ala	Ser	Leu	Val	Thr	Ser	Pro	Leu	Ala	Gln	Ser	Leu	Leu	Ile	Arg
145				150					155					160	
Ile	Gly	Val	Gly	Lys	Thr	Phe	Tyr	Ile	Leu	Gly	Leu	Val	Tyr	Phe	Phe
			165					170				175			
Val	Met	Met	Ile	Ala	Ser	Gln	Phe	Ile	Lys	Gln	Pro	Pro	Gln	Glu	Lys
		180					185					190			
Ile	Thr	Ile	Leu	Thr	His	Asp	Gly	Lys	Lys	Asn	Ala	Met	Asn	Ser	Gln
	195					200					205				
Ile	Ile	Thr	Gly	Leu	Lys	Ala	Asn	Val	Ala	Ile	Lys	Ser	Lys	Thr	Phe
	210				215					220					
Tyr	Ile	Ile	Trp	Leu	Thr	Leu	Phe	Ile	Asn	Ile	Ser	Cys	Gly	Leu	Gly
225				230				235						240	
Leu	Ile	Ser	Ala	Ala	Ser	Pro	Met	Ala	Gln	Asp	Leu	Ala	Gly	Tyr	Ser
		245					250						255		
Ala	Glu	Ser	Ala	Ala	Leu	Leu	Val	Gly	Val	Leu	Gly	Ile	Phe	Asn	Gly
		260					265					270			

Phe Gly Arg Leu Leu Trp Ala Ser Leu Ser Asp Tyr Ile Gly Arg Pro  
           275                                  280                                  285  
 Leu Thr Phe Ile Ile Leu Phe Ile Val Asn Phe Ile Met Thr Ser Ser  
           290                                  295                                  300  
 Leu Phe Leu Ser Phe Asn Ala Ile Val Phe Ala Ile Ala Met Ser Ile  
 305                                  310                                  315                                  320  
 Leu Met Thr Cys Tyr Gly Ala Gly Phe Ser Leu Leu Pro Ala Tyr Leu  
                                   325                                  330                                  335  
 Ser Asp Ile Phe Gly Thr Lys Glu Leu Ala Thr Leu His Gly Tyr Ser  
                                   340                                  345                                  350  
 Leu Thr Ala Trp Ala Ile Ala Gly Leu Phe Gly Pro Leu Leu Leu Ser  
           355                                  360                                  365  
 Lys Thr Tyr Ser Trp Gly Asn Ser Tyr Gln Leu Thr Leu Met Val Phe  
           370                                  375                                  380  
 Gly Phe Leu Phe Leu Phe Gly Leu Leu Leu Ser Leu Tyr Leu Arg Lys  
 385                                  390                                  395                                  400  
 Leu Thr Thr Lys Val Val  
                                   405

<210> 13  
 <211> 303  
 <212> DNA  
 <213> Streptococcus agalactiae

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 aaaattgaaa agcctgctct ttcgtttatg caagatgcgt ggcgtcgctt gaaaaaaaaac 120  
 aaattagcag tagtttcact ctatttatta gctcttttac ttactttttc gttagcctca 180  
 aatttatttg taactcagaa ggatgctaata gggtttgatt cgaaaaaagt aacgacatat 240  
 cgcaacttac cacctaaatt gagttcaaac cttccttttt ggaatggtag cattaatcca 300  
 tca 303

<210> 14  
 <211> 101  
 <212> PRT  
 <213> Streptococcus agalactiae

<400> 14

Met Ala Asp Lys Asn Arg Thr Phe Lys Leu Val Gly Ala Gly Ser Ser  
 1                  5                                  10                                  15  
 Ser Thr Gln Glu Lys Ile Glu Lys Pro Ala Leu Ser Phe Met Gln Asp

20	25	30
Ala Trp Arg Arg Leu Lys Lys Asn Lys Leu Ala Val Val Ser Leu Tyr		
35	40	45
Leu Leu Ala Leu Leu Leu Thr Phe Ser Leu Ala Ser Asn Leu Phe Val		
50	55	60
Thr Gln Lys Asp Ala Asn Gly Phe Asp Ser Lys Lys Val Thr Thr Tyr		
65	70	75
Arg Asn Leu Pro Pro Lys Leu Ser Ser Asn Leu Pro Phe Trp Asn Gly		
85	90	95
Ser Ile Asn Pro Ser		
100		

<210> 15  
 <211> 678  
 <212> DNA  
 <213> Streptococcus agalactiae

<400> 15  
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 attattaatg tagctccagc tatttttgag aaattcgcag gtcattgaaat tatttttact 180  
 tttcgtacaa cgcgtgaagg tggtaatat gtcttatctg atgctgagta tgttgagtta 240  
 atccagaaaa ttaattctat ctacaatcca gattatattg attttgagta tttttcacat 300  
 aaagaagttt ttcaagaaat gctagaattt ccaaatttag tctgtcttta tcacaatttt 360  
 caagagacac cggagaatat tatggagata ttttcagaat taacagccct agcaccacga 420  
 gttgtgaaaa tcgcagtaat gccaaagaat gaacaagatg tcttagacgt tatgaattac 480  
 actcgcggtt tcaagactat taatcctgat caagtttatg cgacggtatc tatgagtaaa 540  
 attggacgta tttctcgttt tgctggtgat gtaactggat ctagttggac atttgcatat 600  
 ttagattcat ctatcgcacc cggacaaatt actatttcag agatgaagcg tgtcaaagca 660  
 ttgcttgacg ctgactga 678

<210> 16  
 <211> 225  
 <212> PRT  
 <213> Streptococcus agalactiae

<400> 16

Met Lys Ile Val Val Pro Val Met Pro Arg Ser Leu Glu Glu Ala Gln
1 5 10 15

Glu Ile Asp Leu Ser Lys Phe Asp Ser Val Asp Ile Ile Glu Trp Arg  
           20                          25                          30  
 Ala Asp Ala Leu Pro Lys Asp Asp Ile Ile Asn Val Ala Pro Ala Ile  
           35                          40                          45  
 Phe Glu Lys Phe Ala Gly His Glu Ile Ile Phe Thr Phe Arg Thr Thr  
           50                          55                          60  
 Arg Glu Gly Gly Asn Ile Val Leu Ser Asp Ala Glu Tyr Val Glu Leu  
   65                          70                          75                          80  
 Ile Gln Lys Ile Asn Ser Ile Tyr Asn Pro Asp Tyr Ile Asp Phe Glu  
                           85                          90                          95  
 Tyr Phe Ser His Lys Glu Val Phe Gln Glu Met Leu Glu Phe Pro Asn  
                          100                         105                         110  
 Leu Val Leu Ser Tyr His Asn Phe Gln Glu Thr Pro Glu Asn Ile Met  
          115                         120                         125  
 Glu Ile Phe Ser Glu Leu Thr Ala Leu Ala Pro Arg Val Val Lys Ile  
   130                         135                         140  
 Ala Val Met Pro Lys Asn Glu Gln Asp Val Leu Asp Val Met Asn Tyr  
  145                         150                         155                         160  
 Thr Arg Gly Phe Lys Thr Ile Asn Pro Asp Gln Val Tyr Ala Thr Val  
                          165                         170                         175  
 Ser Met Ser Lys Ile Gly Arg Ile Ser Arg Phe Ala Gly Asp Val Thr  
                          180                         185                         190  
 Gly Ser Ser Trp Thr Phe Ala Tyr Leu Asp Ser Ser Ile Ala Pro Gly  
          195                         200                         205  
 Gln Ile Thr Ile Ser Glu Met Lys Arg Val Lys Ala Leu Leu Asp Ala  
   210                         215                         220

Asp  
 225

<210> 17  
 <211> 333  
 <212> DNA  
 <213> Streptococcus agalactiae

<400> 17  
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 gtcaattaca taaaacaaca tgttgagtta acaaattggt atcaaataaa aaaaattgag 120  
 tttatcgact ttcaaaaaaa tgagatgaca ggtacatggg gaatttctac taaaattaat 180  
 gaacaatttt cgattagttt ttctgaagat agaattggtg gtaaacttag agcattagga 240

tatcaaccga atgaaatagg tttttcaaag gacatcaata gtaataatca aaatgttaat 300  
gatattgaag tgatttatat gaagaaagaa tag 333

<210> 18  
<211> 110  
<212> PRT  
<213> Streptococcus agalactiae  
<400> 18

Met Lys Asp Leu Phe Ala Thr Thr Glu Ala Ser Ser Arg Lys Gln Glu  
1 5 10 15  
Gln Asp Arg Ile Val Asn Tyr Ile Lys Gln His Val Glu Leu Thr Asn  
20 25 30  
Gly Asn Gln Ile Lys Lys Ile Glu Phe Ile Asp Phe Gln Lys Asn Glu  
35 40 45  
Met Thr Gly Thr Trp Gly Ile Ser Thr Lys Ile Asn Glu Gln Phe Ser  
50 55 60  
Ile Ser Phe Ser Glu Asp Arg Ile Gly Gly Lys Leu Arg Ala Leu Gly  
65 70 75 80  
Tyr Gln Pro Asn Glu Ile Gly Phe Ser Lys Asp Ile Asn Ser Asn Asn  
85 90 95  
Gln Asn Val Asn Asp Ile Glu Val Ile Tyr Met Lys Lys Glu  
100 105 110

<210> 19  
<211> 350  
<212> DNA  
<213> Streptococcus agalactiae

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atgaaaaact tatttgcaac aacagaagca tcatcaagga aacaggaaca agatagaatt 120  
gtcaattaca taaaacaaca tgttgagtta acaaatggta atcaaataaa aaaaattgag 180  
tttatcgact ttcaaaaaaa tgagatgaca ggtacatggg gaatttctac taaaattaat 240  
gaacaatttt cgattagttt ttctgaagat agaattggtg gtaaacttag agcattagga 300  
tatcaaccga atgaaatagg tttttcaaag gacatcaata gtaataatca 350

<210> 20  
<211> 117  
<212> PRT  
<213> Streptococcus agalactiae



<400> 20

Met Lys Lys Arg Ile Trp Tyr Leu Ile Ile Ile Thr Val Ile Leu  
1 5 10 15

Gly Gly Leu Ala Met Lys Asn Leu Phe Ala Thr Thr Glu Ala Ser Ser  
20 25 30

Arg Lys Gln Glu Gln Asp Arg Ile Val Asn Tyr Ile Lys Gln His Val  
35 40 45

Glu Leu Thr Asn Gly Asn Gln Ile Lys Lys Ile Glu Phe Ile Asp Phe  
50 55 60

Gln Lys Asn Glu Met Thr Gly Thr Trp Gly Ile Ser Thr Lys Ile Asn  
65 70 75 80

Glu Gln Phe Ser Ile Ser Phe Ser Glu Asp Arg Ile Gly Gly Lys Leu  
85 90 95

Arg Ala Leu Gly Tyr Gln Pro Asn Glu Ile Gly Phe Ser Lys Asp Ile  
100 105 110

Asn Ser Asn Asn Gln  
115

<210> 21

<211> 1350

<212> DNA

<213> Streptococcus agalactiae

<400> 21

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aatagggcag ccatgtatgg agcaaaagtc ctgttaattg aaggtaggaca agtaggtgga 120  
acttgtgtta acttaggttg tgtacctaag aaaatcatgt ggtatggtgc acaagtttct 180  
gagacactcc ataagtatag ttcaggttat ggttttgaag ccaataatct tagttttgat 240  
tttactactc taaaagctaa tcgcgatgct tacgtgcagc ggtctagaca gtcgtatgcc 300  
gctaattttg agcgtaatgg ggtcgaaaag attgatggat ttgctcgttt tattgataac 360  
catactattg aagtgaatgg tcagcaatat aaagctctc acattactat tgcaacaggt 420  
ggacaccctc tttaccctga tattattgga agtgaacttg gtgagacttc tgatgatttt 480  
tttggatggg agaccttacc aaattctata ttgattgttg gggcgggcta tatcgcgga 540  
gaacttgctg gagtgggttaa tgaattaggc gttgaaacct atcttgcat tagaaaagac 600  
catattctac gcggatttga tgacatggta acaagtgagg ttatggctga aatggagaaa 660  
tcaggtatct ctttacctgc taacctgta cctaaatctc ttaaaccgga tgaaggtggc 720  
aagttgattt ttgaagctga aaatgggaaa acgcttgctg ttgatcgtgt aatatgggct 780

atcggccgtg gaccaaagt agacatggga cttgaaaata ccgatattgt tttaaatgat 840  
 aaagattata tcaaaacaga tgaatttgag aatacttctg tagatggcgt gtatgctatt 900  
 ggagatgtta atgggaaaat tgccttgaca ccggtagcaa ttgcagcagg tcgtcgctta 960  
 tcagaaagac tttttaatca taaagataac gaaaaattag attaccataa tgtaccttca 1020  
 gttatTTTTta ctcacctgt aattgggacg gtaggacttt cagaagcagc agctatcgag 1080  
 caatttgga aagataatat caaagtctat acatcaactt ttacctctat gtatacggct 1140  
 gttaccagta atcgccaagc agttaagatg aagctcataa ccctaggaaa agaggaaaaa 1200  
 gttattgggc ttcattggtg tggttatggt attgatgaaa tgattcaagg tttttcagtt 1260  
 gctatcaaaa tgggggctac taaagcagac tttgatgata ctgttgctat tcacccaact 1320  
 ggatctgagg aatttgttac aatgcgctaa 1350

<210> 22  
 <211> 449  
 <212> PRT  
 <213> Streptococcus agalactiae  
 <400> 22

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 Ser Gly Thr Ala Asn Arg Ala Ala Met Tyr Gly Ala Lys Val Leu Leu  
 20 25 30  
 Ile Glu Gly Gly Gln Val Gly Gly Thr Cys Val Asn Leu Gly Cys Val  
 35 40 45  
 Pro Lys Lys Ile Met Trp Tyr Gly Ala Gln Val Ser Glu Thr Leu His  
 50 55 60  
 Lys Tyr Ser Ser Gly Tyr Gly Phe Glu Ala Asn Asn Leu Ser Phe Asp  
 65 70 75 80  
 Phe Thr Thr Leu Lys Ala Asn Arg Asp Ala Tyr Val Gln Arg Ser Arg  
 85 90 95  
 Gln Ser Tyr Ala Ala Asn Phe Glu Arg Asn Gly Val Glu Lys Ile Asp  
 100 105 110  
 Gly Phe Ala Arg Phe Ile Asp Asn His Thr Ile Glu Val Asn Gly Gln  
 115 120 125  
 Gln Tyr Lys Ala Pro His Ile Thr Ile Ala Thr Gly Gly His Pro Leu  
 130 135 140  
 Tyr Pro Asp Ile Ile Gly Ser Glu Leu Gly Glu Thr Ser Asp Asp Phe

145		150		155		160
Phe Gly Trp Glu Thr Leu Pro Asn Ser Ile Leu Ile Val Gly Ala Gly						
	165		170		175	
Tyr Ile Ala Ala Glu Leu Ala Gly Val Val Asn Glu Leu Gly Val Glu						
	180		185		190	
Thr His Leu Ala Phe Arg Lys Asp His Ile Leu Arg Gly Phe Asp Asp						
	195		200		205	
Met Val Thr Ser Glu Val Met Ala Glu Met Glu Lys Ser Gly Ile Ser						
	210		215		220	
Leu His Ala Asn His Val Pro Lys Ser Leu Lys Arg Asp Glu Gly Gly						
	225		230		235	240
Lys Leu Ile Phe Glu Ala Glu Asn Gly Lys Thr Leu Val Val Asp Arg						
	245		250		255	
Val Ile Trp Ala Ile Gly Arg Gly Pro Asn Val Asp Met Gly Leu Glu						
	260		265		270	
Asn Thr Asp Ile Val Leu Asn Asp Lys Asp Tyr Ile Lys Thr Asp Glu						
	275		280		285	
Phe Glu Asn Thr Ser Val Asp Gly Val Tyr Ala Ile Gly Asp Val Asn						
	290		295		300	
Gly Lys Ile Ala Leu Thr Pro Val Ala Ile Ala Ala Gly Arg Arg Leu						
	305		310		315	320
Ser Glu Arg Leu Phe Asn His Lys Asp Asn Glu Lys Leu Asp Tyr His						
	325		330		335	
Asn Val Pro Ser Val Ile Phe Thr His Pro Val Ile Gly Thr Val Gly						
	340		345		350	
Leu Ser Glu Ala Ala Ala Ile Glu Gln Phe Gly Lys Asp Asn Ile Lys						
	355		360		365	
Val Tyr Thr Ser Thr Phe Thr Ser Met Tyr Thr Ala Val Thr Ser Asn						
	370		375		380	
Arg Gln Ala Val Lys Met Lys Leu Ile Thr Leu Gly Lys Glu Glu Lys						
	385		390		395	400
Val Ile Gly Leu His Gly Val Gly Tyr Gly Ile Asp Glu Met Ile Gln						
	405		410		415	
Gly Phe Ser Val Ala Ile Lys Met Gly Ala Thr Lys Ala Asp Phe Asp						
	420		425		430	
Asp Thr Val Ala Ile His Pro Thr Gly Ser Glu Glu Phe Val Thr Met						
	435		440		445	

Arg

<210> 23  
<211> 3168  
<212> DNA  
<213> Streptococcus agalactiae

<400> 23  
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tcagcttcag aagatgattg gttcgaagaa gataatgaga ggaaaacaaa tgtttctaaa 180  
gagaattcta ctggtgatga aacagttagt gatttatttt ctgatggaaa tagtaataac 240  
tctagttcta aaaccgagtc agtggttaagt gaccctaaac aagtcccaa agcaaaacca 300  
gaggttacac aagaagcaag caattctagt aatgatgcta gcaaagtaga agtaccaaaa 360  
caggatacag cttcaaaaaa ggaaactcta gaaacatcaa cttgggagggc aaaagatttc 420  
gtaactagag gggatacttt agtaggtttt tcaaaatctg gaattaataa gttatctcaa 480  
acatcacact tggttttacc aagtcatgca gcagatggaa ctcaattgac acaagtagct 540  
agctttgctt ttactccaga taaaagacg gccattgcag aatatacaag taggctagga 600  
gaaaatggga aaccgagtcg tttagatatt gatcagaagg aaattattga tgagggagaa 660  
atatttaatg cttaccagtt gactaagctt actattccaa atgggtataa gtctattggg 720  
caagatgctt ttgtggacaa taagaatatt gctgaggtta accttctga gagtctcgag 780  
actatttcag actatgcttt tgctcacatg tctttaaacc aagtaaagtt accagataac 840  
ctaaagggtca ttggagaatt agcttttttt gataatcaga ttgggtggtaa gctttacttg 900  
ccacgtcact tgataaaatt agcagaacgc gctttcaa ataatcgat tcaaacagtt 960  
gaatTTTTGG gaagtaagct taagggtata ggagaagcaa gttttcaaga taataatctg 1020  
aggaatgtta tgcttccgga tggacttgaa aaaatagaat cagaagcttt tacaggaaat 1080  
ccaggagatg aacattacaa caatcagggt gtattgcgca caaggacagg ccaaaatcca 1140  
catcaacttg cgactgagaa tacttacgtc aatccggaca aatcattgtg gcgtgcaaca 1200  
cctgatatgg attataccaa atgggttagag gaagatttta cctatcaaaa aaatagtgtt 1260  
acagggtttt caaataaagg cttacaaaag gtaagacgta ataaaaactt agaaattcca 1320  
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tttcaaagta aaactttacg taaatatgat ttggaagaaa taaagctccc ctcaactatt 1440  
cggaaaatag gtgcttttgc ttttcaatct aataacttga aatcctttga agcaagtga 1500

gatttagaag agattaaaga gggagccttt atgaataatc gtattggaac tctagacttg	1560
aaagacaaac ttatcaaaat aggtgatgct gctttccata ttaatcatat ttatgccatt	1620
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caccttatgt ttatcggaat taagggttaa acaattggtg aaatggcttt tttatccaat	1740
aaactggaaa gtgtaaatct ctctgagcaa aaacaattaa agacaattga ggtccaagct	1800
ttttcggata atgcccttag tgaagtagtc ttaccgcaa atttacagac tattcgtgaa	1860
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aggacacata ataattctca tatgttagca gatggtgagc gttttatcat tgatccagat	2040
aagctatctt ctacaatggg agacctgaa aagggtttta aaataatcga aggttttagat	2100
tactctacat tacgtcagac tactcaaact cagtttagag aaatgactac tgcaggtaaa	2160
gcgttggtat caaaatctaa cctccgcaa ggagaaaaac aaaaattcct tcaagaagca	2220
caatttttcc ttggtcgcgt tgatttgat aaagccatag ctaaagctga gaaggcttta	2280
gtgaccaaga aggcaacaaa gaatggcat ttgcttgaga ggagtattaa caaagcggta	2340
ttagcttata ataatagtgc tattaaaaaa gctaattgta agcgcttgga aaaagagtta	2400
gacttgctga cagatttagt cgagggaaaa ggaccattag cgcaagctac aatggtacaa	2460
ggagtttatt tattaaagac gcctttacca ttgccagaat attatatcgg attgaacggt	2520
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ggacaaaaag atgcatatgg taatcctata ttaaattgtg acgaggataa tgaaggttat	2640
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aatagttccc ttgataagat taaagcaata cgccagattc ctttgcaaaa atatcataga	2760
ttaggaatth tccaagctat ccgaaatgca gcggcagaag cagaccgatt gcttcctaag	2820
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ttaaaaccag ttgattataa aacgccgatt ttttaataagg ctttacctaa tgaaaaggta	2940
gacggtgata gagcggctaa aggtcataat ataaatgcgg agactaataa ttctgtagct	3000
gtaacaccaa taagggtccga gcagcaatta cataagtcac agtctgatgt aaatttacct	3060
caaacaagtt ctaaaaaata ttttatatac gagattctag gatacgtag tttatgtttg	3120
cttttcctag taactgctgg gaaaaaagga aaacgagcaa gaaaataa	3168

<400> 24

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			20				25						30		
Ser	Val	Lys	Gln	Glu	Gln	Thr	Gln	Ser	Ala	Ser	Glu	Asp	Asp	Trp	Phe
		35					40					45			
Glu	Glu	Asp	Asn	Glu	Arg	Lys	Thr	Asn	Val	Ser	Lys	Glu	Asn	Ser	Thr
	50					55					60				
Val	Asp	Glu	Thr	Val	Ser	Asp	Leu	Phe	Ser	Asp	Gly	Asn	Ser	Asn	Asn
65					70					75					80
Ser	Ser	Ser	Lys	Thr	Glu	Ser	Val	Val	Ser	Asp	Pro	Lys	Gln	Val	Pro
			85					90						95	
Lys	Ala	Lys	Pro	Glu	Val	Thr	Gln	Glu	Ala	Ser	Asn	Ser	Ser	Asn	Asp
			100					105					110		
Ala	Ser	Lys	Val	Glu	Val	Pro	Lys	Gln	Asp	Thr	Ala	Ser	Lys	Lys	Glu
		115					120					125			
Thr	Leu	Glu	Thr	Ser	Thr	Trp	Glu	Ala	Lys	Asp	Phe	Val	Thr	Arg	Gly
	130					135					140				
Asp	Thr	Leu	Val	Gly	Phe	Ser	Lys	Ser	Gly	Ile	Asn	Lys	Leu	Ser	Gln
145					150					155					160
Thr	Ser	His	Leu	Val	Leu	Pro	Ser	His	Ala	Ala	Asp	Gly	Thr	Gln	Leu
			165						170					175	
Thr	Gln	Val	Ala	Ser	Phe	Ala	Phe	Thr	Pro	Asp	Lys	Lys	Thr	Ala	Ile
			180					185					190		
Ala	Glu	Tyr	Thr	Ser	Arg	Leu	Gly	Glu	Asn	Gly	Lys	Pro	Ser	Arg	Leu
		195					200					205			
Asp	Ile	Asp	Gln	Lys	Glu	Ile	Ile	Asp	Glu	Gly	Glu	Ile	Phe	Asn	Ala
	210					215					220				
Tyr	Gln	Leu	Thr	Lys	Leu	Thr	Ile	Pro	Asn	Gly	Tyr	Lys	Ser	Ile	Gly
225					230					235					240
Gln	Asp	Ala	Phe	Val	Asp	Asn	Lys	Asn	Ile	Ala	Glu	Val	Asn	Leu	Pro
				245					250					255	
Glu	Ser	Leu	Glu	Thr	Ile	Ser	Asp	Tyr	Ala	Phe	Ala	His	Met	Ser	Leu

260					265					270					
Lys	Gln	Val	Lys	Leu	Pro	Asp	Asn	Leu	Lys	Val	Ile	Gly	Glu	Leu	Ala
275						280						285			
Phe	Phe	Asp	Asn	Gln	Ile	Gly	Gly	Lys	Leu	Tyr	Leu	Pro	Arg	His	Leu
290						295				300					
Ile	Lys	Leu	Ala	Glu	Arg	Ala	Phe	Lys	Ser	Asn	Arg	Ile	Gln	Thr	Val
305				310						315				320	
Glu	Phe	Leu	Gly	Ser	Lys	Leu	Lys	Val	Ile	Gly	Glu	Ala	Ser	Phe	Gln
				325				330						335	
Asp	Asn	Asn	Leu	Arg	Asn	Val	Met	Leu	Pro	Asp	Gly	Leu	Glu	Lys	Ile
		340						345				350			
Glu	Ser	Glu	Ala	Phe	Thr	Gly	Asn	Pro	Gly	Asp	Glu	His	Tyr	Asn	Asn
355						360						365			
Gln	Val	Val	Leu	Arg	Thr	Arg	Thr	Gly	Gln	Asn	Pro	His	Gln	Leu	Ala
370						375				380					
Thr	Glu	Asn	Thr	Tyr	Val	Asn	Pro	Asp	Lys	Ser	Leu	Trp	Arg	Ala	Thr
385				390						395				400	
Pro	Asp	Met	Asp	Tyr	Thr	Lys	Trp	Leu	Glu	Glu	Asp	Phe	Thr	Tyr	Gln
				405				410						415	
Lys	Asn	Ser	Val	Thr	Gly	Phe	Ser	Asn	Lys	Gly	Leu	Gln	Lys	Val	Arg
		420						425				430			
Arg	Asn	Lys	Asn	Leu	Glu	Ile	Pro	Lys	Gln	His	Asn	Gly	Ile	Thr	Ile
		435				440						445			
Thr	Glu	Ile	Gly	Asp	Asn	Ala	Phe	Arg	Asn	Val	Asp	Phe	Gln	Ser	Lys
450				455						460					
Thr	Leu	Arg	Lys	Tyr	Asp	Leu	Glu	Glu	Ile	Lys	Leu	Pro	Ser	Thr	Ile
465				470				475				480			
Arg	Lys	Ile	Gly	Ala	Phe	Ala	Phe	Gln	Ser	Asn	Asn	Leu	Lys	Ser	Phe
		485						490				495			
Glu	Ala	Ser	Glu	Asp	Leu	Glu	Glu	Ile	Lys	Glu	Gly	Ala	Phe	Met	Asn
		500				505						510			
Asn	Arg	Ile	Gly	Thr	Leu	Asp	Leu	Lys	Asp	Lys	Leu	Ile	Lys	Ile	Gly
515						520						525			
Asp	Ala	Ala	Phe	His	Ile	Asn	His	Ile	Tyr	Ala	Ile	Val	Leu	Pro	Glu
530				535						540					
Ser	Val	Gln	Glu	Ile	Gly	Arg	Ser	Ala	Phe	Arg	Gln	Asn	Gly	Ala	Leu
545				550				555				560			
His	Leu	Met	Phe	Ile	Gly	Asn	Lys	Val	Lys	Thr	Ile	Gly	Glu	Met	Ala

565					570					575					
Phe	Leu	Ser	Asn	Lys	Leu	Glu	Ser	Val	Asn	Leu	Ser	Glu	Gln	Lys	Gln
			580					585					590		
Leu	Lys	Thr	Ile	Glu	Val	Gln	Ala	Phe	Ser	Asp	Asn	Ala	Leu	Ser	Glu
			595				600					605			
Val	Val	Leu	Pro	Pro	Asn	Leu	Gln	Thr	Ile	Arg	Glu	Glu	Ala	Phe	Lys
			610				615					620			
Arg	Asn	His	Leu	Lys	Glu	Val	Lys	Gly	Ser	Ser	Thr	Leu	Ser	Gln	Ile
			625				630					635			640
Thr	Phe	Asn	Ala	Phe	Asp	Gln	Asn	Asp	Gly	Asp	Lys	Arg	Phe	Gly	Lys
			645						650					655	
Lys	Val	Val	Val	Arg	Thr	His	Asn	Asn	Ser	His	Met	Leu	Ala	Asp	Gly
			660					665					670		
Glu	Arg	Phe	Ile	Ile	Asp	Pro	Asp	Lys	Leu	Ser	Ser	Thr	Met	Val	Asp
			675				680						685		
Leu	Glu	Lys	Val	Leu	Lys	Ile	Ile	Glu	Gly	Leu	Asp	Tyr	Ser	Thr	Leu
			690				695					700			
Arg	Gln	Thr	Thr	Gln	Thr	Gln	Phe	Arg	Glu	Met	Thr	Thr	Ala	Gly	Lys
			705				710					715			720
Ala	Leu	Leu	Ser	Lys	Ser	Asn	Leu	Arg	Gln	Gly	Glu	Lys	Gln	Lys	Phe
			725						730					735	
Leu	Gln	Glu	Ala	Gln	Phe	Phe	Leu	Gly	Arg	Val	Asp	Leu	Asp	Lys	Ala
			740					745					750		
Ile	Ala	Lys	Ala	Glu	Lys	Ala	Leu	Val	Thr	Lys	Lys	Ala	Thr	Lys	Asn
			755				760					765			
Gly	His	Leu	Leu	Glu	Arg	Ser	Ile	Asn	Lys	Ala	Val	Leu	Ala	Tyr	Asn
			770				775					780			
Asn	Ser	Ala	Ile	Lys	Lys	Ala	Asn	Val	Lys	Arg	Leu	Glu	Lys	Glu	Leu
			785				790					795			800
Asp	Leu	Leu	Thr	Asp	Leu	Val	Glu	Gly	Lys	Gly	Pro	Leu	Ala	Gln	Ala
			805						810					815	
Thr	Met	Val	Gln	Gly	Val	Tyr	Leu	Leu	Lys	Thr	Pro	Leu	Pro	Leu	Pro
			820					825					830		
Glu	Tyr	Tyr	Ile	Gly	Leu	Asn	Val	Tyr	Phe	Asp	Lys	Ser	Gly	Lys	Leu
			835				840					845			
Ile	Tyr	Ala	Leu	Asp	Met	Ser	Asp	Thr	Ile	Gly	Glu	Gly	Gln	Lys	Asp
			850				855					860			
Ala	Tyr	Gly	Asn	Pro	Ile	Leu	Asn	Val	Asp	Glu	Asp	Asn	Glu	Gly	Tyr



865		870		875		880
His Thr Leu Ala Val Ala Thr Leu Ala Asp Tyr Glu Gly Leu Tyr Ile						
	885			890		895
Lys Asp Ile Leu Asn Ser Ser Leu Asp Lys Ile Lys Ala Ile Arg Gln						
	900			905		910
Ile Pro Leu Ala Lys Tyr His Arg Leu Gly Ile Phe Gln Ala Ile Arg						
	915			920		925
Asn Ala Ala Ala Glu Ala Asp Arg Leu Leu Pro Lys Thr Pro Lys Gly						
	930			935		940
Tyr Leu Asn Glu Val Pro Asn Tyr Arg Lys Lys Gln Met Glu Lys Asn						
	945			950		955
Leu Lys Pro Val Asp Tyr Lys Thr Pro Ile Phe Asn Lys Ala Leu Pro						
	965			970		975
Asn Glu Lys Val Asp Gly Asp Arg Ala Ala Lys Gly His Asn Ile Asn						
	980			985		990
Ala Glu Thr Asn Asn Ser Val Ala Val Thr Pro Ile Arg Ser Glu Gln						
	995			1000		1005
Gln Leu His Lys Ser Gln Ser Asp Val Asn Leu Pro Gln Thr Ser						
	1010			1015		1020
Ser Lys Asn Asn Phe Ile Tyr Glu Ile Leu Gly Tyr Val Ser Leu						
	1025			1030		1035
Cys Leu Leu Phe Leu Val Thr Ala Gly Lys Lys Gly Lys Arg Ala						
	1040			1045		1050
Arg Lys						
	1055					

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<210> 25
<211> 153
<212> DNA
<213> Streptococcus agalactiae

<400> 25
gcaggatata tcatgcacaa gcacgagget atcgtgtcat gctgggggtca acccaggaag      60
acatgtcggc acaagctgaa gatttcttta cagtctgtac acaataaaga gacgggtaag      120
agcgctttta atgacaaaga acgactagca att                                     153

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<210> 26
<211> 51
<212> PRT
<213> Streptococcus agalactiae

<400> 26

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Ala Gly Tyr Ile Met His Lys His Glu Ala Ile Val Ser Cys Trp Gly  
 1 5 10 15  
 Gln Pro Arg Lys Thr Cys Arg His Lys Leu Lys Ile Ser Leu Gln Ser  
 20 25 30  
 Val His Asn Lys Glu Thr Gly Lys Ser Ala Phe Asn Asp Lys Glu Arg  
 35 40 45  
 Leu Ala Ile  
 50

<210> 27  
 <211> 1095  
 <212> DNA  
 <213> Streptococcus agalactiae

<400> 27  
 gtgtcattta tgcaaagaaa atcctattta aaatccatga gtgttcttac tttaacagct 60  
 tgtcttatat caggatatgt ggttaaagat attgctatgt tacatgcagt atctgccagt 120  
 gagaagaaag caaataatgt cagtccgaga gaaaatctct acagggctgt caatgataat 180  
 tggctagcca atacaaaact caaacaaggg cagactagtg ttaatagttt ttcagaaatt 240  
 gaggataaat taaagcaact gttagtgtct gatatggcta aaatggcctc aggaaagatt 300  
 gaaacaacca atgatgaaca gaaaaaatg gttgcatact ataaacaagg tatggacttt 360  
 aaaacaagag ataaaaatgg tctcaaacct ctaaaaccag ttttacaaaa acttgaagca 420  
 gtctcttcaa tgaaagactt tcaaagtttg gcccatgatt ttgtgatgag tggttttgtt 480  
 ttaccatttg gtttgactgt ggaaaccaat gctcgagata atagccaaaa gcaattggtg 540  
 ctctgtcaag caccgcatt acttgaatca cctgaccaat ataagaaggg caataaagaa 600  
 ggtgaggcta aattatcagc ttaccgtact tcagcaatgg ctttgcttaa acaagctgga 660  
 aaaagtaaca ttgaagatag aaaactagtt aaacaagcta tagcatttga tagactctta 720  
 tcagaaaaaa cgcaagttga tcaaagtaaa atcacagctg aaagtgagac agctgcgggg 780  
 cgatataacc ctgaaagtat ggaaacggtt cacaattacg ccaaggaatt tgactttaaa 840  
 gaattgattg aaaaactagt tgggccaacg aataaggcag tcaatgtaga agataaaact 900  
 tatttttaac aggttaatga tggtataaat agtaacaat tagccaatat gaaagcatgg 960  
 atgatgattt ctatgctagt tgatcaatca gattttctag gagaacaaaa tcgtcaagca 1020  
 gcgagtgctt ttaagaatgt tgcgtctggt ttgactcaga ttgaatcgaa agaaaaaatg 1080  
 cttacacca attag 1095

<210> 28  
 <211> 364  
 <212> PRT  
 <213> Streptococcus agalactiae

<400> 28

Met	Ser	Phe	Met	Gln	Arg	Lys	Ser	Tyr	Leu	Lys	Ser	Met	Ser	Val	Leu
1			5						10					15	
Thr	Leu	Thr	Ala	Cys	Leu	Ile	Ser	Gly	Tyr	Val	Val	Lys	Asp	Ile	Ala
			20					25					30		
Met	Leu	His	Ala	Val	Ser	Ala	Ser	Glu	Lys	Lys	Ala	Asn	Asn	Val	Ser
		35					40					45			
Pro	Arg	Glu	Asn	Leu	Tyr	Arg	Ala	Val	Asn	Asp	Asn	Trp	Leu	Ala	Asn
	50					55					60				
Thr	Lys	Leu	Lys	Gln	Gly	Gln	Thr	Ser	Val	Asn	Ser	Phe	Ser	Glu	Ile
65				70						75				80	
Glu	Asp	Lys	Leu	Lys	Gln	Leu	Leu	Val	Ser	Asp	Met	Ala	Lys	Met	Ala
			85					90						95	
Ser	Gly	Lys	Ile	Glu	Thr	Thr	Asn	Asp	Glu	Gln	Lys	Lys	Met	Val	Ala
			100				105						110		
Tyr	Tyr	Lys	Gln	Gly	Met	Asp	Phe	Lys	Thr	Arg	Asp	Lys	Asn	Gly	Leu
		115					120					125			
Lys	Pro	Leu	Lys	Pro	Val	Leu	Gln	Lys	Leu	Glu	Ala	Val	Ser	Ser	Met
	130					135					140				
Lys	Asp	Phe	Gln	Ser	Leu	Ala	His	Asp	Phe	Val	Met	Ser	Gly	Phe	Val
145				150					155					160	
Leu	Pro	Phe	Gly	Leu	Thr	Val	Glu	Thr	Asn	Ala	Arg	Asp	Asn	Ser	Gln
			165					170						175	
Lys	Gln	Leu	Val	Leu	Arg	Gln	Ala	Pro	Ala	Leu	Leu	Glu	Ser	Pro	Asp
		180					185						190		
Gln	Tyr	Lys	Lys	Gly	Asn	Lys	Glu	Gly	Glu	Ala	Lys	Leu	Ser	Ala	Tyr
		195				200						205			
Arg	Thr	Ser	Ala	Met	Ala	Leu	Leu	Lys	Gln	Ala	Gly	Lys	Ser	Asn	Ile
	210					215					220				
Glu	Asp	Arg	Lys	Leu	Val	Lys	Gln	Ala	Ile	Ala	Phe	Asp	Arg	Leu	Leu
225				230					235					240	
Ser	Glu	Lys	Thr	Gln	Val	Asp	Gln	Ser	Lys	Ile	Thr	Ala	Glu	Ser	Glu
			245					250					255		
Thr	Ala	Ala	Gly	Arg	Tyr	Asn	Pro	Glu	Ser	Met	Glu	Thr	Val	His	Asn

260	265	270
Tyr Ala Lys Glu Phe Asp Phe Lys Glu Leu Ile Glu Lys Leu Val Gly		
275	280	285
Pro Thr Asn Lys Ala Val Asn Val Glu Asp Lys Thr Tyr Phe Lys Gln		
290	295	300
Val Asn Asp Val Ile Asn Ser Lys Gln Leu Ala Asn Met Lys Ala Trp		
305	310	315
Met Met Ile Ser Met Leu Val Asp Gln Ser Asp Phe Leu Gly Glu Gln		
325	330	335
Asn Arg Gln Ala Ala Ser Ala Phe Lys Asn Val Ala Ser Gly Leu Thr		
340	345	350
Gln Ile Glu Ser Lys Glu Lys Met Leu Thr Pro Asn		
355	360	

<210> 29  
 <211> 174  
 <212> DNA  
 <213> Streptococcus agalactiae

<400> 29	
atggaaatgc ctaaaagaaa tgaattactc aataaagaaa ttaaaatgag tattgataaa	60
cttagatata aagaaccaga gagtgaacat gacaagcgac ctacttttta tttggtagta	120
cttataacttg ttactgtagc agttatattg tcgttattta aatatttttt atag	174

<210> 30  
 <211> 57  
 <212> PRT  
 <213> Streptococcus agalactiae

<400> 30

Met Glu Met Pro Lys Arg Asn Glu Leu Leu Asn Lys Glu Ile Lys Met	
1                      5                      10                      15	
Ser Ile Asp Lys Leu Arg Tyr Lys Glu Pro Glu Ser Glu His Asp Lys	
20                      25                      30	
Arg Pro Thr Phe Tyr Leu Val Val Leu Ile Leu Val Thr Val Ala Val	
35                      40                      45	
Ile Leu Ser Leu Phe Lys Tyr Phe Leu	
50                      55	

<210> 31  
 <211> 140  
 <212> DNA  
 <213> Streptococcus agalactiae

<400> 31  
 atgcagggtat ttttaaatat tgtcaataaa ttctttgatc cagttattca tatgggttcg 60  
 ggagttgtga tgctaattgt catgacaggt ttagccatga tatttgaggt gaagttttct 120  
 aaagcacttg aagggtggtat 140

<210> 32  
 <211> 46  
 <212> PRT  
 <213> Streptococcus agalactiae

<400> 32  
 Met Gln Val Phe Leu Asn Ile Val Asn Lys Phe Phe Asp Pro Val Ile  
 1 5 10 15  
 His Met Gly Ser Gly Val Val Met Leu Ile Val Met Thr Gly Leu Ala  
 20 25 30  
 Met Ile Phe Gly Val Lys Phe Ser Lys Ala Leu Glu Gly Gly  
 35 40 45

<210> 33  
 <211> 110  
 <212> DNA  
 <213> Streptococcus agalactiae

<400> 33  
 atgaaaaaga aaacattcag tgcttataac tttttaacgg ctcttatcct ttgtcttttg 60  
 acagtgcctt ttatctttcc attttattgg attatgacag gagcttttaa 110

<210> 34  
 <211> 36  
 <212> PRT  
 <213> Streptococcus agalactiae

<400> 34  
 Met Lys Lys Lys Thr Phe Ser Ala Tyr Asn Phe Leu Thr Ala Leu Ile  
 1 5 10 15  
 Leu Cys Leu Leu Thr Val Leu Phe Ile Phe Pro Phe Tyr Trp Ile Met  
 20 25 30  
 Thr Gly Ala Phe  
 35

<210> 35  
 <211> 744  
 <212> DNA  
 <213> Streptococcus agalactiae

<400> 35

atgactgaga actgggttaca tactaaagat ggttcagata tttattatcg tgtcgttggt 60  
 caaggtcaac cgattgtttt tttacatggc aatagcttaa gtagtcgcta ttttgataag 120  
 caaatagcat atttttctaa gtattaccaa gttattgtta tggatagtag agggcatggc 180  
 aaaagtcatg caaagctaaa taccattagt ttcaggcaaa tagcagttga cttaaaggat 240  
 atcttagttc atttagagat tgataaagtt atattggtag gccatagcga tggtgctaatt 300  
 ttagcttttag tttttcaaac gatgtttcca gatatggtta gagggctttt gcttaattca 360  
 gggaacctga ctattcatgg tcagcgatgg tgggatattc ttttagtaag gattgcctat 420  
 aaattccttc actatttagg gaaactcttt ccgtatatga ggcaaaaagc tcaagttatt 480  
 tcgcttatgt tggaggattt gaagattagt ccagctgatt tacagcatgt gtcaactcct 540  
 gtaatgggtt tggttggaaa taaggacata attaagttaa atcattctaa gaaacttgct 600  
 tcttattttc caagggggga gttttattct ttagttggct ttgggcatca cattattaag 660  
 caagattccc atgtttttta tattattgca aaaaagttta tcaacgatac gttgaaagga 720  
 gaaattgttg aaaaagctaa ttga 744

<210> 36  
 <211> 247  
 <212> PRT  
 <213> Streptococcus agalactiae

<400> 36

Met	Thr	Glu	Asn	Trp	Leu	His	Thr	Lys	Asp	Gly	Ser	Asp	Ile	Tyr	Tyr
1				5					10					15	
Arg	Val	Val	Gly	Gln	Gly	Gln	Pro	Ile	Val	Phe	Leu	His	Gly	Asn	Ser
			20					25					30		
Leu	Ser	Ser	Arg	Tyr	Phe	Asp	Lys	Gln	Ile	Ala	Tyr	Phe	Ser	Lys	Tyr
		35					40					45			
Tyr	Gln	Val	Ile	Val	Met	Asp	Ser	Arg	Gly	His	Gly	Lys	Ser	His	Ala
	50					55					60				
Lys	Leu	Asn	Thr	Ile	Ser	Phe	Arg	Gln	Ile	Ala	Val	Asp	Leu	Lys	Asp
65					70				75					80	
Ile	Leu	Val	His	Leu	Glu	Ile	Asp	Lys	Val	Ile	Leu	Val	Gly	His	Ser
			85					90						95	
Asp	Gly	Ala	Asn	Leu	Ala	Leu	Val	Phe	Gln	Thr	Met	Phe	Pro	Asp	Met
			100					105					110		
Val	Arg	Gly	Leu	Leu	Leu	Asn	Ser	Gly	Asn	Leu	Thr	Ile	His	Gly	Gln
			115				120					125			

Arg Trp Trp Asp Ile Leu Leu Val Arg Ile Ala Tyr Lys Phe Leu His  
 130 135 140

Tyr Leu Gly Lys Leu Phe Pro Tyr Met Arg Gln Lys Ala Gln Val Ile  
 145 150 155 160

Ser Leu Met Leu Glu Asp Leu Lys Ile Ser Pro Ala Asp Leu Gln His  
 165 170 175

Val Ser Thr Pro Val Met Val Leu Val Gly Asn Lys Asp Ile Ile Lys  
 180 185 190

Leu Asn His Ser Lys Lys Leu Ala Ser Tyr Phe Pro Arg Gly Glu Phe  
 195 200 205

Tyr Ser Leu Val Gly Phe Gly His His Ile Ile Lys Gln Asp Ser His  
 210 215 220

Val Phe Asn Ile Ile Ala Lys Lys Phe Ile Asn Asp Thr Leu Lys Gly  
 225 230 235 240

Glu Ile Val Glu Lys Ala Asn  
 245

<210> 37  
 <211> 405  
 <212> DNA  
 <213> Streptococcus agalactiae

<400> 37  
 atggttagcaa aagagttagg taaaaatagc ttactatcc caactatttg ttctaattgc 60  
 tccgcaggta ctgccattgc agttgtatat aatgatgacc attctttctt aagatacggc 120  
 tatcccgagt ctccacttca tattttttatc aatacacgga tcattgcaca ggcaccaagc 180  
 aaatattttt gggctggtat tggggacggt atttcaaaag cccctgaagt agaacgtgct 240  
 accttagagg ctaagaccaa taaactacca catactgcag tgtaggaca agcagtcgct 300  
 ctgtcttcaa aggaagcttt ttatcaattt ggtgaacaag gtctaaaaga cgttgaagct 360  
 aatttagctt cgcgtgcagt tgaagaaatt gcgcttgata totta 405

<210> 38  
 <211> 135  
 <212> PRT  
 <213> Streptococcus agalactiae

<400> 38

Met Val Ala Lys Glu Leu Gly Lys Asn Ser Phe Thr Ile Pro Thr Ile  
 1 5 10 15

Cys Ser Asn Cys Ser Ala Gly Thr Ala Ile Ala Val Val Tyr Asn Asp

20	25	30
Asp His Ser Phe Leu Arg Tyr Gly Tyr Pro Glu Ser Pro Leu His Ile		
35	40	45
Phe Ile Asn Thr Arg Ile Ile Ala Gln Ala Pro Ser Lys Tyr Phe Trp		
50	55	60
Ala Gly Ile Gly Asp Gly Ile Ser Lys Ala Pro Glu Val Glu Arg Ala		
65	70	75
Thr Leu Glu Ala Lys Thr Asn Lys Leu Pro His Thr Ala Val Leu Gly		
85	90	95
Gln Ala Val Ala Leu Ser Ser Lys Glu Ala Phe Tyr Gln Phe Gly Glu		
100	105	110
Gln Gly Leu Lys Asp Val Glu Ala Asn Leu Ala Ser Arg Ala Val Glu		
115	120	125
Glu Ile Ala Leu Asp Ile Leu		
130	135	

<210> 39  
 <211> 921  
 <212> DNA  
 <213> Streptococcus agalactiae

<400> 39  
 ttgagggaaa cttactggaa aatttcaagc gattgcgata aaataaatct tgcagagttt 60  
 tctagagaaa ggaggtcaga tttattggag tggcaagatc tagcgcagtt acctgtatct 120  
 atttttaaag actatgttac agatgctcaa gacgcggaaa aaccttttat atggacagaa 180  
 gtatttttta gggagattaa tcgctcaaat caagaaatta ttttgcata tggccgatg 240  
 actaagacag tcattctggg gatgttagat cgagaattac cacatttaga attagctaaa 300  
 aaagaaatca tcagtcgtgg ttatgaacca gttgttcgga attttgagg tctcgcagtt 360  
 gtagctgatg aaggaat ttt aaatttttca ttggttattc cagatgtttt tgagagaaaa 420  
 ttgtctatct cagatgggta tottataatg gtcgatttta ttagaagtat attttcggat 480  
 ttttatcaac ctattgagca ctttgaagta gagacctcct attgtcctgg taagtttgat 540  
 cttagtataa atggcaaaaa atttgctggc ttggctcagc gccgtataaa gaatggtatt 600  
 gcggtatcaa ttaccttag cgtttgtggc gatcaaaaag ggcggagtca aatgatttca 660  
 gatttttata agattgggtct aggtgatacg ggtagtccaa ttgcttatcc aaatgtagat 720  
 cctgaaatta tggctaattc atctgatcta ttagattgtc ctatgacagt agaagatggt 780  
 attgatcgta tgttgattag ccttaaaca gtaggtttta atgatcgttt actgatgatt 840



agacccgatt tagttgcaga gtttgataga tttcaggcta agtctatggc taataagggg 900

atggtgagca gagatgaata a 921

<210> 40  
<211> 306  
<212> PRT  
<213> Streptococcus agalactiae

<400> 40

Met Arg Glu Thr Tyr Trp Lys Ile Ser Ser Asp Cys Asp Lys Ile Asn  
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Leu Ala Glu Phe Ser Arg Glu Arg Arg Ser Asp Leu Leu Glu Trp Gln  
20 25 30

Asp Leu Ala Gln Leu Pro Val Ser Ile Phe Lys Asp Tyr Val Thr Asp  
35 40 45

Ala Gln Asp Ala Glu Lys Pro Phe Ile Trp Thr Glu Val Phe Leu Arg  
50 55 60

Glu Ile Asn Arg Ser Asn Gln Glu Ile Ile Leu His Ile Trp Pro Met  
65 70 75 80

Thr Lys Thr Val Ile Leu Gly Met Leu Asp Arg Glu Leu Pro His Leu  
85 90 95

Glu Leu Ala Lys Lys Glu Ile Ile Ser Arg Gly Tyr Glu Pro Val Val  
100 105 110

Arg Asn Phe Gly Gly Leu Ala Val Val Ala Asp Glu Gly Ile Leu Asn  
115 120 125

Phe Ser Leu Val Ile Pro Asp Val Phe Glu Arg Lys Leu Ser Ile Ser  
130 135 140

Asp Gly Tyr Leu Ile Met Val Asp Phe Ile Arg Ser Ile Phe Ser Asp  
145 150 155 160

Phe Tyr Gln Pro Ile Glu His Phe Glu Val Glu Thr Ser Tyr Cys Pro  
165 170 175

Gly Lys Phe Asp Leu Ser Ile Asn Gly Lys Lys Phe Ala Gly Leu Ala  
180 185 190

Gln Arg Arg Ile Lys Asn Gly Ile Ala Val Ser Ile Tyr Leu Ser Val  
195 200 205

Cys Gly Asp Gln Lys Gly Arg Ser Gln Met Ile Ser Asp Phe Tyr Lys  
210 215 220

Ile Gly Leu Gly Asp Thr Gly Ser Pro Ile Ala Tyr Pro Asn Val Asp  
225 230 235 240

Pro	Glu	Ile	Met	Ala	Asn	Leu	Ser	Asp	Leu	Leu	Asp	Cys	Pro	Met	Thr
				245					250					255	
Val	Glu	Asp	Val	Ile	Asp	Arg	Met	Leu	Ile	Ser	Leu	Lys	Gln	Val	Gly
			260					265					270		
Phe	Asn	Asp	Arg	Leu	Leu	Met	Ile	Arg	Pro	Asp	Leu	Val	Ala	Glu	Phe
		275					280					285			
Asp	Arg	Phe	Gln	Ala	Lys	Ser	Met	Ala	Asn	Lys	Gly	Met	Val	Ser	Arg
	290						295				300				

Asp Glu  
305

<210> 41  
 <211> 867  
 <212> DNA  
 <213> Streptococcus agalactiae

<400> 41	
ttggaaggtt tacttattgc attgattccc atgtttgcgt gggaaagtat tggatttggt	60
agtaataaaa ttggagggcg tccaaatcaa caaacatttg gaatgacttt aggagcattg	120
ctattttgcga ttatcgtatg gttattttaa cagccagaga tgactgcctc atttgtggatt	180
tttggtatct taggtggtat cctatggtca gtcggccaaa atgggtcaatt tcaagcaatg	240
aaatatatgg gagtctctgt tgctaattcca ctgtcaagtg gtgcacaatt agtaggtgga	300
agcctagttg gtgcttttagt ctttcatgaa tggactaagc caatccaatt tatttttagga	360
ttgacagcgt tgacattatt agttatcggc ttctatttct caagtaaacg tgatgtttca	420
gaacaagctt tggcaacaca tcaagagttt tcaaaaggat ttgctacaat tgcttattca	480
actgtaggtt acatctcgta cgcagtttta ttttaacaaca ttatgaagtt cgacgctatg	540
gccgtcattt taccatggc tgttggaatg tgtctaggtg caatttgttt catgaagttt	600
cgtgttaact ttgaggctgt tgttggttaa aatatgatta cagggtctcat gtggggcggt	660
ggtaatgtct tcatgttatt ggcagcagct aaagcagggc tagcaattgc ttttagtttt	720
tctcaacttg gagtaattat ctctattatt ggtggtattt tatttttagg tgagacaaaa	780
acgaagaaag agcagaaatg ggttgtcatg ggtatccttt gttttgttat ggggtgctata	840
ttacttggtt ttgttaaata ttattaa	867

<210> 42  
 <211> 288  
 <212> PRT  
 <213> Streptococcus agalactiae

<400> 42

Met Glu Gly Leu Leu Ile Ala Leu Ile Pro Met Phe Ala Trp Glu Ser  
1 5 10 15  
Ile Gly Phe Val Ser Asn Lys Ile Gly Gly Arg Pro Asn Gln Gln Thr  
20 25 30  
Phe Gly Met Thr Leu Gly Ala Leu Leu Phe Ala Ile Ile Val Trp Leu  
35 40 45  
Phe Lys Gln Pro Glu Met Thr Ala Ser Leu Trp Ile Phe Gly Ile Leu  
50 55 60  
Gly Gly Ile Leu Trp Ser Val Gly Gln Asn Gly Gln Phe Gln Ala Met  
65 70 75 80  
Lys Tyr Met Gly Val Ser Val Ala Asn Pro Leu Ser Ser Gly Ala Gln  
85 90 95  
Leu Val Gly Gly Ser Leu Val Gly Ala Leu Val Phe His Glu Trp Thr  
100 105 110  
Lys Pro Ile Gln Phe Ile Leu Gly Leu Thr Ala Leu Thr Leu Leu Val  
115 120 125  
Ile Gly Phe Tyr Phe Ser Ser Lys Arg Asp Val Ser Glu Gln Ala Leu  
130 135 140  
Ala Thr His Gln Glu Phe Ser Lys Gly Phe Ala Thr Ile Ala Tyr Ser  
145 150 155 160  
Thr Val Gly Tyr Ile Ser Tyr Ala Val Leu Phe Asn Asn Ile Met Lys  
165 170 175  
Phe Asp Ala Met Ala Val Ile Leu Pro Met Ala Val Gly Met Cys Leu  
180 185 190  
Gly Ala Ile Cys Phe Met Lys Phe Arg Val Asn Phe Glu Ala Val Val  
195 200 205  
Val Lys Asn Met Ile Thr Gly Leu Met Trp Gly Val Gly Asn Val Phe  
210 215 220  
Met Leu Leu Ala Ala Ala Lys Ala Gly Leu Ala Ile Ala Phe Ser Phe  
225 230 235 240  
Ser Gln Leu Gly Val Ile Ile Ser Ile Ile Gly Gly Ile Leu Phe Leu  
245 250 255  
Gly Glu Thr Lys Thr Lys Lys Glu Gln Lys Trp Val Val Met Gly Ile  
260 265 270  
Leu Cys Phe Val Met Gly Ala Ile Leu Leu Gly Ile Val Lys Ser Tyr  
275 280 285

<210> 43

<211> 960  
 <212> DNA  
 <213> Streptococcus agalactiae

<400> 43  
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 acttgggaaa aactaaccga acaatttttg ctcgatacac gtatcccttt atcaaatgac 120  
 ttagacgatt ggcgcgaaact ttccgctcaa gaaaaagatc ttgttggcaa ggtttttggga 180  
 ggcttaaccc tacttgatac catgcaatca gaaactggtg ttgaagctat tcgtgccgat 240  
 gttcgcacgc ctcacgaaga agctgtctta aacaatattc aattcatgga atctgttcac 300  
 gctaaatctt attcttcaat tttctcaact ttaaatacta aatcagaaat tgaagaaatt 360  
 ttcgagtggga ctaataataa tgagttcctt caagaaaaag cacgtattat caatgacatt 420  
 tatgctaattg gaaatgcctt tcaaaaaaag gtggcttcca cctacctcga aacttttctt 480  
 ttttattctg gctttttcac acctctttac tatttgggaa ataataagtt agcaaattgt 540  
 gctgaaatca ttaaattaat tattcgtgat gaatctgtac atggtactta tatcggttac 600  
 aaattccagc ttgggttttaa cgaattacca gaagatgagc aagagaattt tcgtgattgg 660  
 atgtatgacc tcctttatca gctgtatgaa aacgaagaaa aatacaccaa gacactttat 720  
 gatggcgtag gatggactga agaagttatg acctttttac gctacaatgc taataaagct 780  
 cttatgaatt taggacaaga tcctttattc ccagatacag caaatgatgt caacccaatt 840  
 gttatgaatg gtatttcaac aggaacatca aaccatgact tcttctctca agtaggtaat 900  
 ggttacctac ttggtagcgt tgaagctatg catgatgatg actataacta tggattataa 960

<210> 44  
 <211> 319  
 <212> PRT  
 <213> Streptococcus agalactiae

<400> 44

Met	Thr	Thr	Tyr	Tyr	Glu	Ala	Ile	Asn	Trp	Asn	Glu	Ile	Glu	Asp	Val
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Ile	Asp	Lys	Ser	Thr	Trp	Glu	Lys	Leu	Thr	Glu	Gln	Phe	Trp	Leu	Asp
			20					25						30	
Thr	Arg	Ile	Pro	Leu	Ser	Asn	Asp	Leu	Asp	Asp	Trp	Arg	Lys	Leu	Ser
			35					40					45		
Ala	Gln	Glu	Lys	Asp	Leu	Val	Gly	Lys	Val	Phe	Gly	Gly	Leu	Thr	Leu
			50					55					60		

Leu Asp Thr Met Gln Ser Glu Thr Gly Val Glu Ala Ile Arg Ala Asp  
 65 70 75 80  
 Val Arg Thr Pro His Glu Glu Ala Val Leu Asn Asn Ile Gln Phe Met  
 85 90 95  
 Glu Ser Val His Ala Lys Ser Tyr Ser Ser Ile Phe Ser Thr Leu Asn  
 100 105 110  
 Thr Lys Ser Glu Ile Glu Glu Ile Phe Glu Trp Thr Asn Asn Asn Glu  
 115 120 125  
 Phe Leu Gln Glu Lys Ala Arg Ile Ile Asn Asp Ile Tyr Ala Asn Gly  
 130 135 140  
 Asn Ala Leu Gln Lys Lys Val Ala Ser Thr Tyr Leu Glu Thr Phe Leu  
 145 150 155 160  
 Phe Tyr Ser Gly Phe Phe Thr Pro Leu Tyr Tyr Leu Gly Asn Asn Lys  
 165 170 175  
 Leu Ala Asn Val Ala Glu Ile Ile Lys Leu Ile Ile Arg Asp Glu Ser  
 180 185 190  
 Val His Gly Thr Tyr Ile Gly Tyr Lys Phe Gln Leu Gly Phe Asn Glu  
 195 200 205  
 Leu Pro Glu Asp Glu Gln Glu Asn Phe Arg Asp Trp Met Tyr Asp Leu  
 210 215 220  
 Leu Tyr Gln Leu Tyr Glu Asn Glu Glu Lys Tyr Thr Lys Thr Leu Tyr  
 225 230 235 240  
 Asp Gly Val Gly Trp Thr Glu Glu Val Met Thr Phe Leu Arg Tyr Asn  
 245 250 255  
 Ala Asn Lys Ala Leu Met Asn Leu Gly Gln Asp Pro Leu Phe Pro Asp  
 260 265 270  
 Thr Ala Asn Asp Val Asn Pro Ile Val Met Asn Gly Ile Ser Thr Gly  
 275 280 285  
 Thr Ser Asn His Asp Phe Phe Ser Gln Val Gly Asn Gly Tyr Leu Leu  
 290 295 300  
 Gly Ser Val Glu Ala Met His Asp Asp Asp Tyr Asn Tyr Gly Leu  
 305 310 315

<210> 45

<211> 311

<212> DNA

<213> Streptococcus agalactiae

<400> 45

atgaattggt cacgtatctg ggaactcgta aaaattaata tcctttattc aaaccctcag 60

actctatcgg cactaagaaa aaagcaagaa aagcatccta aaaaagaatt ttcagcttat 120

aaatccatgt ttagaaatca gttatttcag attttgctct tttcaataat ttatgtattt 180  
ctcttttgat cacttgattt taaagaatat cggggtatt tcacgttcta cattggatc 240  
tttactag tatccattat ctactctttt attgcatgt acagtgtttt ctatgagagt 300  
gacgatgtta a 311

<210> 46  
<211> 103  
<212> PRT  
<213> Streptococcus agalactiae

<400> 46

Met Asn Trp Ser Arg Ile Trp Glu Leu Val Lys Ile Asn Ile Leu Tyr  
1 5 10 15  
Ser Asn Pro Gln Thr Leu Ser Ala Leu Arg Lys Lys Gln Glu Lys His  
20 25 30  
Pro Lys Lys Glu Phe Ser Ala Tyr Lys Ser Met Phe Arg Asn Gln Leu  
35 40 45  
Phe Gln Ile Leu Leu Phe Ser Ile Ile Tyr Val Phe Leu Phe Val Ser  
50 55 60  
Leu Asp Phe Lys Glu Tyr Pro Gly Tyr Phe Thr Phe Tyr Ile Gly Ile  
65 70 75 80  
Phe Thr Leu Val Ser Ile Ile Tyr Ser Phe Ile Ala Met Tyr Ser Val  
85 90 95  
Phe Tyr Glu Ser Asp Asp Val  
100

<210> 47  
<211> 312  
<212> DNA  
<213> Streptococcus agalactiae

<400> 47

taatctttta gtcaacggag caacaggaaa attgcaggct atgcatcaga tattccacca 60  
cataatttag cagaagtcac tgatgctgtc gtgtacatga ttgatcacc taaagctaaa 120  
ttagataaat taatggaatt tctacctggt ccagattttc caactggcgc tatcattcaa 180  
ggaaaagatg aaattcgtaa ggcataatgag actggtaagg ggagagtagc ggttcgctcg 240  
cgaactgcta ttgaaacctt aaaaggtggt aagaaacaaa ttattgttac tgaaattcct 300  
tatgaagtta at 312

<210> 48  
 <211> 103  
 <212> PRT  
 <213> Streptococcus agalactiae

<400> 48

Ser	Phe	Ser	Gln	Arg	Ser	Asn	Arg	Lys	Ile	Ala	Gly	Tyr	Ala	Thr	Asp
1				5					10					15	
Ile	Pro	Pro	His	Asn	Leu	Ala	Glu	Val	Ile	Asp	Ala	Val	Val	Tyr	Met
			20					25					30		
Ile	Asp	His	Pro	Lys	Ala	Lys	Leu	Asp	Lys	Leu	Met	Glu	Phe	Leu	Pro
		35					40					45			
Gly	Pro	Asp	Phe	Pro	Thr	Gly	Ala	Ile	Ile	Gln	Gly	Lys	Asp	Glu	Ile
	50						55				60				
Arg	Lys	Ala	Tyr	Glu	Thr	Gly	Lys	Gly	Arg	Val	Ala	Val	Arg	Ser	Arg
65					70				75					80	
Thr	Ala	Ile	Glu	Thr	Leu	Lys	Gly	Gly	Lys	Lys	Gln	Ile	Ile	Val	Thr
				85					90					95	
Glu	Ile	Pro	Tyr	Glu	Val	Asn									
				100											

<210> 49  
 <211> 654  
 <212> DNA  
 <213> Streptococcus agalactiae

<400> 49

atgggacgta agtgggccaa tattgttgcc aaaaagactg ctaaagatgg tgctaactca	60
aaagtatacg ctaaattcgg tgttgaaata tatgttgctg caaagcaagg tgaaccagac	120
cccaggtcaa actcagctct aaaattcggt ttggaccgtg ctaagcaagc acaagttcca	180
aagcatgtta ttgataaagc gattgataaa gccaaaggaa acacagatga aactttcgta	240
gagggacgct atgaagggtt tgggtccaaat ggttcaatga ttattgtgga tactttgaca	300
tcaaattgta accgtacggc agcaaattgta cgtactgctt acggtaagaa cgggtggcaat	360
atgggagctt caggatcggt atcctactta ttgataaaa aaggtgtcat cgtttttgct	420
ggtgatgatg ctgacactgt cttcgaacaa ttacttgaag cggatgtaga cgtagatgat	480
gttgaagcag aagaggggaac aataacagtt tataccgccc caacagatct tcataaaggt	540
atccaagcac ttcgcgataa tgggtgtagaa gaattccaag ttactgaact tgaaatgatt	600
cctcaatcag aagtagtatt ggaaggtgat gaccttgaaa cttttgaaaa gctt	654

<210> 50  
 <211> 218  
 <212> PRT  
 <213> Streptococcus agalactiae

<400> 50

Met	Gly	Arg	Lys	Trp	Ala	Asn	Ile	Val	Ala	Lys	Lys	Thr	Ala	Lys	Asp
1			5					10						15	
Gly	Ala	Asn	Ser	Lys	Val	Tyr	Ala	Lys	Phe	Gly	Val	Glu	Ile	Tyr	Val
		20						25					30		
Ala	Ala	Lys	Gln	Gly	Glu	Pro	Asp	Pro	Glu	Ser	Asn	Ser	Ala	Leu	Lys
		35					40					45			
Phe	Val	Leu	Asp	Arg	Ala	Lys	Gln	Ala	Gln	Val	Pro	Lys	His	Val	Ile
	50					55					60				
Asp	Lys	Ala	Ile	Asp	Lys	Ala	Lys	Gly	Asn	Thr	Asp	Glu	Thr	Phe	Val
65					70					75				80	
Glu	Gly	Arg	Tyr	Glu	Gly	Phe	Gly	Pro	Asn	Gly	Ser	Met	Ile	Ile	Val
			85						90					95	
Asp	Thr	Leu	Thr	Ser	Asn	Val	Asn	Arg	Thr	Ala	Ala	Asn	Val	Arg	Thr
		100						105					110		
Ala	Tyr	Gly	Lys	Asn	Gly	Gly	Asn	Met	Gly	Ala	Ser	Gly	Ser	Val	Ser
		115					120					125			
Tyr	Leu	Phe	Asp	Lys	Lys	Gly	Val	Ile	Val	Phe	Ala	Gly	Asp	Asp	Ala
	130					135					140				
Asp	Thr	Val	Phe	Glu	Gln	Leu	Leu	Glu	Ala	Asp	Val	Asp	Val	Asp	Asp
145					150					155				160	
Val	Glu	Ala	Glu	Glu	Gly	Thr	Ile	Thr	Val	Tyr	Thr	Ala	Pro	Thr	Asp
			165						170					175	
Leu	His	Lys	Gly	Ile	Gln	Ala	Leu	Arg	Asp	Asn	Gly	Val	Glu	Glu	Phe
		180						185					190		
Gln	Val	Thr	Glu	Leu	Glu	Met	Ile	Pro	Gln	Ser	Glu	Val	Val	Leu	Glu
		195					200					205			
Gly	Asp	Asp	Leu	Glu	Thr	Phe	Glu	Lys	Leu						
	210					215									

<210> 51  
 <211> 135  
 <212> DNA  
 <213> Streptococcus agalactiae

<400> 51

ttggagaaat atttgaagaa cccgattaca tggattggat tagttcttgt ggttacgtgg 60



tttttaacta aaagtagtga atttttgatt tttgggtgtgt gtgtcttggt gtttagtattt 120

gctagtcaaa gtgat 135

<210> 52

<211> 45

<212> PRT

<213> Streptococcus agalactiae

<400> 52

Met Glu Lys Tyr Leu Lys Asn Pro Ile Thr Trp Ile Gly Leu Val Leu  
1 5 10 15

Val Val Thr Trp Phe Leu Thr Lys Ser Ser Glu Phe Leu Ile Phe Gly  
20 25 30

Val Cys Val Leu Leu Leu Val Phe Ala Ser Gln Ser Asp  
35 40 45

<210> 53

<211> 318

<212> DNA

<213> Streptococcus agalactiae

<400> 53

atgacacaat cagatgcata tctctcgttg aacgcgaaga cacgcttttag agatcgcata 60

ggtaattatc attttacttc ggataaagag gctggtgaac aatatatgat agaacatggt 120

gaacctaata cgatgggtgtt cacatcacta attgaaaagc tagattattt ggtttctaatt 180

aactactatg aatcggacct tctaaaacaa tataaccttg agtttatttg ccaaattttt 240

gagcatgcat acgctaagaa atttgctttt ctaaatttta tgggggcttt aaaattttat 300

aatgcttatg ctcttaatt 318

<210> 54

<211> 106

<212> PRT

<213> Streptococcus agalactiae

<400> 54

Met Thr Gln Ser Asp Ala Tyr Leu Ser Leu Asn Ala Lys Thr Arg Phe  
1 5 10 15

Arg Asp Arg Thr Gly Asn Tyr His Phe Thr Ser Asp Lys Glu Ala Val  
20 25 30

Glu Gln Tyr Met Ile Glu His Val Glu Pro Asn Thr Met Val Phe Thr  
35 40 45

Ser Leu Ile Glu Lys Leu Asp Tyr Leu Val Ser Asn Asn Tyr Tyr Glu

50	55	60
Ser Asp Leu Leu Lys Gln Tyr Asn Leu Glu Phe Ile Cys Gln Ile Phe		
65	70	75 80
Glu His Ala Tyr Ala Lys Lys Phe Ala Phe Leu Asn Phe Met Gly Ala		
	85	90 95
Leu Lys Phe Tyr Asn Ala Tyr Ala Leu Asn		
	100	105

<210> 55  
 <211> 2451  
 <212> DNA  
 <213> Streptococcus agalactiae

<400> 55	
atgggtatttta tggcaaataa gaaaaaaaca aaaggaaaga aaaccagaag acctactaag	60
gcagaaatag agcgtcaaag agctattcaa aggatgatta ctgctcttgt tttaacaatt	120
attctcttct ttggtattat cagattaggt atttttggta ttacagtcta taacgtcatc	180
cgttttatgg taggtagctt ggcttactta tttattgcgg caactttaat ctacctttat	240
ttcttttaat ggttgcgaaa gaaagatagc ttagtagcag gttttttgat agcttcttta	300
ggattattga ttgagtggca tgcttacctt ttctcaatgc ctattttgaa agataaagaa	360
attttgcgtt caactgctcg attaattgtg tctgatttaa tgcaatttaa aatcactggt	420
tttgccgggtg gaggtatggt ggggtgctttg atttacaagc caattgcttt tctcttttct	480
aatattgggtg cctatatgat tgggtgtctc ttcattcattt tgggtctctt tttaatgagt	540
tctctggaag tttatgacat cgtcgaattt attagagctt ttaaaaataa agtggcagag	600
aagcacgagc aaaataaaaa ggagcgtttt gctaagcgag agatgaaaaa agcaatcgct	660
gaacaagagc gcatagagcg tcaaaaagct gaagaagaag cttatttagc ttcggttaat	720
gtagaccctg aaacgggtga gattctagag gatcaagctg aggacaattt ggatgatgcg	780
ctaccacctg aggtaagtga aacatcaact ccggtatttg agccagagat ccttgcttat	840
gagacatcgc ctcaaaatga tcctttacca gtagagccga caatttatat agaagactat	900
gattcgccga ttcctaatat gagagaaaat gatgaggaaa tggtttatga tttagatgat	960
gatgtagatg atagtgatat agaaaatgtc gactttacac ctaaaacgac actgggttat	1020
aaattaccaa cgatagattt atttgcacca gataagccta aaaatcaatc caaagaaaag	1080
gatttagtcc gaaagaatat cagagtttta gaagaaacat ttagaagttt tggtatcgat	1140
gtaaaagtag aacgtgctga aattggacca tcagttacta aatatgaaat taaaccagca	1200

gttggagttc gtgtgaatcg tatttcaaatt ctatctgacg acctagctct tgctcttgca 1260  
 gcaaaagatg tgcgtataga agcaccaatt cctggaaaat cattaatagg tattgaagtt 1320  
 cctaactcag aaattgcaac ggtttctttc cgcgaacttt gggaacaatc tgatgccaat 1380  
 cctgaaaacc ttttagaagt accactagga aaagctgtta acggcaatgc tcgcagtttt 1440  
 aacttagcta gaatgccgca tcttttggtta gctggttcaa ctgggttcagg taaatctgtg 1500  
 gcagttaatg gaattatttc aagtattttg atgaaggcac gtccagatca agttaagttt 1560  
 atgatgattg atcccaaaat ggttgaatta tctgtttata atgatattcc acatttatta 1620  
 atccctgttg taaccaatcc gcgtaaagca agtaaggcac tccaaaaagt tgttgatgaa 1680  
 atggaaaatc gatacgagtt atttagcaaa attggtgtgc gtaatatagc aggttataat 1740  
 acaaaggttg aagagtttaa tgcttctctc gagcaaaaac aaatgccttt gcctttaatc 1800  
 gttgtcattg tagatgaatt ggctgacttg atgatggttg ctagtaaaga agttgaagat 1860  
 gctattattc gtttggggca aaaagcacgt gctgcaggta tccatatgat tcttgcaact 1920  
 caacgtccat ccgtagatgt tatttctggt ttgattaaag caaatgttcc gtcgcgtatt 1980  
 gcatttgctg tttcaagtgg tactgatagc cgtacgatcc ttgatgaaaa tgggtgctgaa 2040  
 aagctcttgg gacggggtga catgctcttt aagcctattg atgagaatca tccagtacga 2100  
 ctacaagggt cctttatttc agatgatgat gttgaaagga tcgttggttt tatcaaagac 2160  
 caagccgagg ctgactatga tgatgccttt gatcctggag aagtatctga aacagataac 2220  
 ggctctggtg gtggcggcgg agtacctgaa agtgatcctc tttttgaaga agccaaggga 2280  
 ctcgtttttag agacgcaaaa agcaagtgcc tcaatgattc aacgccgatt gtctgttggt 2340  
 ttcaatagag caacaagact aatggaagaa ttagaagcag cgggggttat tgggtccagca 2400  
 gaaggaacca agccacgaaa agttttaatg actccaactc cgagtgaata a 2451

<210> 56  
 <211> 816  
 <212> PRT  
 <213> Streptococcus agalactiae

<400> 56

Met	Val	Phe	Met	Ala	Asn	Lys	Lys	Lys	Thr	Lys	Gly	Lys	Lys	Thr	Arg
1				5					10					15	
Arg	Pro	Thr	Lys	Ala	Glu	Ile	Glu	Arg	Gln	Arg	Ala	Ile	Gln	Arg	Met
			20					25					30		
Ile	Thr	Ala	Leu	Val	Leu	Thr	Ile	Ile	Leu	Phe	Phe	Gly	Ile	Ile	Arg

35					40					45					
Leu	Gly	Ile	Phe	Gly	Ile	Thr	Val	Tyr	Asn	Val	Ile	Arg	Phe	Met	Val
50					55					60					
Gly	Ser	Leu	Ala	Tyr	Leu	Phe	Ile	Ala	Ala	Thr	Leu	Ile	Tyr	Leu	Tyr
65					70					75					80
Phe	Phe	Lys	Trp	Leu	Arg	Lys	Lys	Asp	Ser	Leu	Val	Ala	Gly	Phe	Leu
				85					90					95	
Ile	Ala	Ser	Leu	Gly	Leu	Leu	Ile	Glu	Trp	His	Ala	Tyr	Leu	Phe	Ser
			100					105					110		
Met	Pro	Ile	Leu	Lys	Asp	Lys	Glu	Ile	Leu	Arg	Ser	Thr	Ala	Arg	Leu
		115					120					125			
Ile	Val	Ser	Asp	Leu	Met	Gln	Phe	Lys	Ile	Thr	Val	Phe	Ala	Gly	Gly
130					135					140					
Gly	Met	Leu	Gly	Ala	Leu	Ile	Tyr	Lys	Pro	Ile	Ala	Phe	Leu	Phe	Ser
145					150					155					160
Asn	Ile	Gly	Ala	Tyr	Met	Ile	Gly	Val	Leu	Phe	Ile	Ile	Leu	Gly	Leu
				165					170					175	
Phe	Leu	Met	Ser	Ser	Leu	Glu	Val	Tyr	Asp	Ile	Val	Glu	Phe	Ile	Arg
			180					185					190		
Ala	Phe	Lys	Asn	Lys	Val	Ala	Glu	Lys	His	Glu	Gln	Asn	Lys	Lys	Glu
		195					200					205			
Arg	Phe	Ala	Lys	Arg	Glu	Met	Lys	Lys	Ala	Ile	Ala	Glu	Gln	Glu	Arg
		210				215					220				
Ile	Glu	Arg	Gln	Lys	Ala	Glu	Glu	Glu	Ala	Tyr	Leu	Ala	Ser	Val	Asn
225					230					235					240
Val	Asp	Pro	Glu	Thr	Gly	Glu	Ile	Leu	Glu	Asp	Gln	Ala	Glu	Asp	Asn
				245					250					255	
Leu	Asp	Asp	Ala	Leu	Pro	Pro	Glu	Val	Ser	Glu	Thr	Ser	Thr	Pro	Val
			260					265					270		
Phe	Glu	Pro	Glu	Ile	Leu	Ala	Tyr	Glu	Thr	Ser	Pro	Gln	Asn	Asp	Pro
		275					280					285			
Leu	Pro	Val	Glu	Pro	Thr	Ile	Tyr	Leu	Glu	Asp	Tyr	Asp	Ser	Pro	Ile
		290				295					300				
Pro	Asn	Met	Arg	Glu	Asn	Asp	Glu	Glu	Met	Val	Tyr	Asp	Leu	Asp	Asp
305					310					315				320	
Asp	Val	Asp	Asp	Ser	Asp	Ile	Glu	Asn	Val	Asp	Phe	Thr	Pro	Lys	Thr
				325					330					335	
Thr	Leu	Val	Tyr	Lys	Leu	Pro	Thr	Ile	Asp	Leu	Phe	Ala	Pro	Asp	Lys

340	345	350
Pro Lys Asn Gln Ser Lys Glu Lys Asp Leu Val Arg Lys Asn Ile Arg 355 360 365		
Val Leu Glu Glu Thr Phe Arg Ser Phe Gly Ile Asp Val Lys Val Glu 370 375 380		
Arg Ala Glu Ile Gly Pro Ser Val Thr Lys Tyr Glu Ile Lys Pro Ala 385 390 395 400		
Val Gly Val Arg Val Asn Arg Ile Ser Asn Leu Ser Asp Asp Leu Ala 405 410 415		
Leu Ala Leu Ala Ala Lys Asp Val Arg Ile Glu Ala Pro Ile Pro Gly 420 425 430		
Lys Ser Leu Ile Gly Ile Glu Val Pro Asn Ser Glu Ile Ala Thr Val 435 440 445		
Ser Phe Arg Glu Leu Trp Glu Gln Ser Asp Ala Asn Pro Glu Asn Leu 450 455 460		
Leu Glu Val Pro Leu Gly Lys Ala Val Asn Gly Asn Ala Arg Ser Phe 465 470 475 480		
Asn Leu Ala Arg Met Pro His Leu Leu Val Ala Gly Ser Thr Gly Ser 485 490 495		
Gly Lys Ser Val Ala Val Asn Gly Ile Ile Ser Ser Ile Leu Met Lys 500 505 510		
Ala Arg Pro Asp Gln Val Lys Phe Met Met Ile Asp Pro Lys Met Val 515 520 525		
Glu Leu Ser Val Tyr Asn Asp Ile Pro His Leu Leu Ile Pro Val Val 530 535 540		
Thr Asn Pro Arg Lys Ala Ser Lys Ala Leu Gln Lys Val Val Asp Glu 545 550 555 560		
Met Glu Asn Arg Tyr Glu Leu Phe Ser Lys Ile Gly Val Arg Asn Ile 565 570 575		
Ala Gly Tyr Asn Thr Lys Val Glu Glu Phe Asn Ala Ser Ser Glu Gln 580 585 590		
Lys Gln Met Pro Leu Pro Leu Ile Val Val Ile Val Asp Glu Leu Ala 595 600 605		
Asp Leu Met Met Val Ala Ser Lys Glu Val Glu Asp Ala Ile Ile Arg 610 615 620		
Leu Gly Gln Lys Ala Arg Ala Ala Gly Ile His Met Ile Leu Ala Thr 625 630 635 640		
Gln Arg Pro Ser Val Asp Val Ile Ser Gly Leu Ile Lys Ala Asn Val		

645					650					655						
Pro	Ser	Arg	Ile	Ala	Phe	Ala	Val	Ser	Ser	Gly	Thr	Asp	Ser	Arg	Thr	
660					665					670						
Ile	Leu	Asp	Glu	Asn	Gly	Ala	Glu	Lys	Leu	Leu	Gly	Arg	Gly	Asp	Met	
675					680					685						
Leu	Phe	Lys	Pro	Ile	Asp	Glu	Asn	His	Pro	Val	Arg	Leu	Gln	Gly	Ser	
690					695					700						
Phe	Ile	Ser	Asp	Asp	Asp	Val	Glu	Arg	Ile	Val	Gly	Phe	Ile	Lys	Asp	
705					710					715					720	
Gln	Ala	Glu	Ala	Asp	Tyr	Asp	Asp	Ala	Phe	Asp	Pro	Gly	Glu	Val	Ser	
725					730					735						
Glu	Thr	Asp	Asn	Gly	Ser	Gly	Gly	Gly	Gly	Gly	Val	Pro	Glu	Ser	Asp	
740					745					750						
Pro	Leu	Phe	Glu	Glu	Ala	Lys	Gly	Leu	Val	Leu	Glu	Thr	Gln	Lys	Ala	
755					760					765						
Ser	Ala	Ser	Met	Ile	Gln	Arg	Arg	Leu	Ser	Val	Gly	Phe	Asn	Arg	Ala	
770					775					780						
Thr	Arg	Leu	Met	Glu	Glu	Leu	Glu	Ala	Ala	Gly	Val	Ile	Gly	Pro	Ala	
785					790					795					800	
Glu	Gly	Thr	Lys	Pro	Arg	Lys	Val	Leu	Met	Thr	Pro	Thr	Pro	Ser	Glu	
805					810					815						

<210> 57  
 <211> 669  
 <212> DNA  
 <213> Streptococcus agalactiae

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ttaaaagatc atttatcagc tagctatcat gtctctagtg tcagcaattt tcgtgatgtg	120
aaacaagaaa ttatcgcat tcaaccgat ttgatactaa tggatattac gttaccctat	180
tttaatggtt tttactggac tgcagaattg cgtaagtttt taacaattcc tattattttc	240
atttcatcta gtaatgatga aatggatatg gttatggcat taaatatggg gggatgatgac	300
tttatttcaa aaccattctc tctagctgta ttagatgcta agctaactgc tattttaagg	360
agaagtcaac aatttatcca acaggaatta acttttgggg gatttacgtt gacaagagaa	420
gggttattgt ctagccaaga taaagaggtt attttatcgc caacagaaaa taaaatccta	480
tctatcttgc tcatgcatcc taaacaagta gtctcaaaag agtctctatt agagaaactt	540
tgggaaaatg atagttttat tgatcaaat acacttaatg ttaatatgac acgcttacgt	600

aaaaaaattg tcccaatagg ttttgattac attcatacag tgagaggagt tgggtattta 660

ctacaatga 669

<210> 58

<211> 222

<212> PRT

<213> Streptococcus agalactiae

<400> 58

Met Ser Gln Glu Gln Gly Lys Ile Tyr Ile Val Glu Asp Asp Met Thr  
1 5 10 15

Ile Val Ser Leu Leu Lys Asp His Leu Ser Ala Ser Tyr His Val Ser  
20 25 30

Ser Val Ser Asn Phe Arg Asp Val Lys Gln Glu Ile Ile Ala Phe Gln  
35 40 45

Pro Asp Leu Ile Leu Met Asp Ile Thr Leu Pro Tyr Phe Asn Gly Phe  
50 55 60

Tyr Trp Thr Ala Glu Leu Arg Lys Phe Leu Thr Ile Pro Ile Ile Phe  
65 70 75 80

Ile Ser Ser Ser Asn Asp Glu Met Asp Met Val Met Ala Leu Asn Met  
85 90 95

Gly Gly Asp Asp Phe Ile Ser Lys Pro Phe Ser Leu Ala Val Leu Asp  
100 105 110

Ala Lys Leu Thr Ala Ile Leu Arg Arg Ser Gln Gln Phe Ile Gln Gln  
115 120 125

Glu Leu Thr Phe Gly Gly Phe Thr Leu Thr Arg Glu Gly Leu Leu Ser  
130 135 140

Ser Gln Asp Lys Glu Val Ile Leu Ser Pro Thr Glu Asn Lys Ile Leu  
145 150 155 160

Ser Ile Leu Leu Met His Pro Lys Gln Val Val Ser Lys Glu Ser Leu  
165 170 175

Leu Glu Lys Leu Trp Glu Asn Asp Ser Phe Ile Asp Gln Asn Thr Leu  
180 185 190

Asn Val Asn Met Thr Arg Leu Arg Lys Lys Ile Val Pro Ile Gly Phe  
195 200 205

Asp Tyr Ile His Thr Val Arg Gly Val Gly Tyr Leu Leu Gln  
210 215 220

<210> 59

<211> 1341

<212> DNA

<213> Streptococcus agalactiae

<400> 59

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cagtatagtc agctacattt ggcaggtgtg tcaactgcta gtaatttatg gactccgttt    180
ttcgctttat tagtaggtat gatttcagca ttagtaccag tagttggtca acatttgggt    240
agaggaaata aagaacaaat tcgcacagaa tttcatcaat ttctatattt aggtttgata    300
ctgtccttaa tattattttt aatcatgcaa tttattgctc aacctgtctt ggggagtttg    360
ggtttagaag atgaagttct agcagttggt cgtggttatt taaattatat gttgattgga    420
atcatgccgc tgggtgttgt tagcatttgc cgttcattct ttgatgcatt ggggttaaca    480
aggttatcta tgtatctgat gcttttaatt ctacccttta attcattttt taattatatg    540
cttatctacg gttaaatttg tatgcctaga ctaggagggt cgggggcagg tcttggaact    600
tctttaactt attgggctat ttttattggt attattattg tgatgtcact tcacctcaa    660
attaaaacat atcatatatg gactctggaa agaataaaag ctctttgat tattgaagat    720
attcgattgg gattaccgat tggtttacia atttttgcag aagttgcaat ttttgcagta    780
gtaggcttat tcatggcaaa attttcttca atcattattg cagcacatca ggctgctatg    840
aatttttcat cattaatgta tgcatttctt ttaagtattt ccaactgctc agctattaca    900
atatcgtttg aagtaggggc agagcgcttt caggacgcaa ccacttatag taggatagga    960
cgcttaacag cggtagggat tacatcagga accttactat ttttatttct atttcgtgag   1020
aatgtagcag caatgtataa tagtgccctt cactttgtcg ctattacagc tcaattccta   1080
acttatagtc tctttttcca gtttgcagat gcttatgcag ctctgtaca ggggatttta   1140
cgaggctata aggatacaac aaaaccattt atgatcggtg cgggctctta ttggttatgt   1200
gctttgccat tagcggttat cttagaaaaa aatagccagt taggtccgtt tgcctattgg   1260
attggtttaa tcacaggtat ttttgtttgt ggtctatttc taaaccaacg tctgcaaaag   1320
attaagaagt tgtattatta a                                     1341
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<210> 60

<211> 446

<212> PRT

<213> Streptococcus agalactiae

<400> 60



Met	Tyr	Gln	Thr	Gln	Thr	Asn	Lys	Glu	Lys	Phe	Val	Leu	Phe	Leu	Lys	1	5	10	15
Leu	Phe	Ile	Pro	Val	Leu	Ile	Tyr	Gln	Phe	Ala	Asn	Phe	Ser	Ala	Thr	20	25	30	
Phe	Ile	Asp	Ser	Val	Met	Thr	Gly	Gln	Tyr	Ser	Gln	Leu	His	Leu	Ala	35	40	45	
Gly	Val	Ser	Thr	Ala	Ser	Asn	Leu	Trp	Thr	Pro	Phe	Phe	Ala	Leu	Leu	50	55	60	
Val	Gly	Met	Ile	Ser	Ala	Leu	Val	Pro	Val	Val	Gly	Gln	His	Leu	Gly	65	70	75	80
Arg	Gly	Asn	Lys	Glu	Gln	Ile	Arg	Thr	Glu	Phe	His	Gln	Phe	Leu	Tyr	85	90	95	
Leu	Gly	Leu	Ile	Leu	Ser	Leu	Ile	Leu	Phe	Leu	Ile	Met	Gln	Phe	Ile	100	105	110	
Ala	Gln	Pro	Val	Leu	Gly	Ser	Leu	Gly	Leu	Glu	Asp	Glu	Val	Leu	Ala	115	120	125	
Val	Gly	Arg	Gly	Tyr	Leu	Asn	Tyr	Met	Leu	Ile	Gly	Ile	Met	Pro	Leu	130	135	140	
Val	Leu	Phe	Ser	Ile	Cys	Arg	Ser	Phe	Phe	Asp	Ala	Leu	Gly	Leu	Thr	145	150	155	160
Arg	Leu	Ser	Met	Tyr	Leu	Met	Leu	Leu	Ile	Leu	Pro	Phe	Asn	Ser	Phe	165	170	175	
Phe	Asn	Tyr	Met	Leu	Ile	Tyr	Gly	Lys	Phe	Gly	Met	Pro	Arg	Leu	Gly	180	185	190	
Gly	Ala	Gly	Ala	Gly	Leu	Gly	Thr	Ser	Leu	Thr	Tyr	Trp	Ala	Ile	Phe	195	200	205	
Ile	Gly	Ile	Ile	Ile	Val	Met	Ser	Leu	His	Pro	Gln	Ile	Lys	Thr	Tyr	210	215	220	
His	Ile	Trp	Thr	Leu	Glu	Arg	Ile	Lys	Ala	Pro	Leu	Ile	Ile	Glu	Asp	225	230	235	240
Ile	Arg	Leu	Gly	Leu	Pro	Ile	Gly	Leu	Gln	Ile	Phe	Ala	Glu	Val	Ala	245	250	255	
Ile	Phe	Ala	Val	Val	Gly	Leu	Phe	Met	Ala	Lys	Phe	Ser	Ser	Ile	Ile	260	265	270	
Ile	Ala	Ala	His	Gln	Ala	Ala	Met	Asn	Phe	Ser	Ser	Leu	Met	Tyr	Ala	275	280	285	
Phe	Pro	Leu	Ser	Ile	Ser	Thr	Ala	Leu	Ala	Ile	Thr	Ile	Ser	Phe	Glu	290	295	300	

Val Gly Ala Glu Arg Phe Gln Asp Ala Thr Thr Tyr Ser Arg Ile Gly  
 305 310 315 320  
 Arg Leu Thr Ala Val Gly Ile Thr Ser Gly Thr Leu Leu Phe Leu Phe  
 325 330 335  
 Leu Phe Arg Glu Asn Val Ala Ala Met Tyr Asn Ser Ala Pro His Phe  
 340 345 350  
 Val Ala Ile Thr Ala Gln Phe Leu Thr Tyr Ser Leu Phe Phe Gln Phe  
 355 360 365  
 Ala Asp Ala Tyr Ala Ala Pro Val Gln Gly Ile Leu Arg Gly Tyr Lys  
 370 375 380  
 Asp Thr Thr Lys Pro Phe Met Ile Gly Ala Gly Ser Tyr Trp Leu Cys  
 385 390 395 400  
 Ala Leu Pro Leu Ala Val Ile Leu Glu Lys Asn Ser Gln Leu Gly Pro  
 405 410 415  
 Phe Ala Tyr Trp Ile Gly Leu Ile Thr Gly Ile Phe Val Cys Gly Leu  
 420 425 430  
 Phe Leu Asn Gln Arg Leu Gln Lys Ile Lys Lys Leu Tyr Tyr  
 435 440 445

<210> 61  
 <211> 1029  
 <212> DNA  
 <213> Streptococcus agalactiae

<400> 61  
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 tcaacacgaa ataagtctat aaacttatca aataatttca tagacttatt atatcaattt 120  
 tcaataaaat gctataataa aaccatgtca ttttcattaa aaattagaaa tccatacggt 180  
 gaacataccg ttaaagaact ccttgaagat ttttttttga ttccacgtaa gattagacat 240  
 tttttgcgtg ttaaaaaaca tgtacttata aacaatgaat tcattaattg gcaaactgtc 300  
 gtccaagaaa acgatactat taccttaatc tttgatgatg aggattaccc tactaaaaaa 360  
 attcctctgg gcagagcaga gcttattgat tgtctttatg aggatgaaca tcttattatc 420  
 gttaataaac ctgaaggat gaaaactcac ggtaaccaac caaatgaaat agcactgtta 480  
 aatcatgtat ctgcctattc tggacaaaaca tgctatggtg ttcacgcct agatatggag 540  
 accagtggag ctgttttatt tgctaaaaat ccatttatac ttccccttat caatcaacgc 600  
 ttagaacgaa aagaaatttg gcgtgaatat tgggcttttag ttgaaggaaa attttcacct 660  
 aagcatcaag ttttgagaga caaaattgga cggaaccgtc atgacagacg taaacgaatc 720

attgattcta aaaacgggtca acatgctatg acaatcattg acgttttgaa gtatatccaa 780  
aatagtagtc tcataaaatg ccgactggaa accggaagaa cccatcaaat tcgcattcac 840  
ttatctcatc acggacatcc tttaatagga gatccccctct acaacccttc ttctaataat 900  
gaaagggttaa tgctacacgc tcaccgattg actctatccc atccattaac ttgcgaaact 960  
attagcgtag aggccccttc atctactttc gagaagggtt taaacaatta taaaaaagga 1020  
gttgataa 1029

<210> 62  
<211> 342  
<212> PRT  
<213> Streptococcus agalactiae

<400> 62

Met	Leu	Val	Ser	Ser	Leu	Val	Ser	Cys	Ser	Phe	Phe	Leu	Val	Ile	Ser	1	5	10	15
Ser	Leu	Ser	Ser	Ser	Thr	Arg	Asn	Lys	Ser	Ile	Asn	Leu	Ser	Asn	Asn	20	25	30	
Phe	Ile	Asp	Leu	Leu	Tyr	Gln	Phe	Ser	Ile	Lys	Cys	Tyr	Asn	Lys	Thr	35	40	45	
Met	Ser	Phe	Ser	Leu	Lys	Ile	Arg	Asn	Pro	Tyr	Gly	Glu	His	Thr	Val	50	55	60	
Lys	Glu	Leu	Leu	Glu	Asp	Tyr	Phe	Leu	Ile	Pro	Arg	Lys	Ile	Arg	His	65	70	75	80
Phe	Leu	Arg	Val	Lys	Lys	His	Val	Leu	Ile	Asn	Asn	Glu	Phe	Ile	Asn	85	90	95	
Trp	Gln	Thr	Val	Val	Gln	Glu	Asn	Asp	Thr	Ile	Thr	Leu	Ile	Phe	Asp	100	105	110	
Asp	Glu	Asp	Tyr	Pro	Thr	Lys	Lys	Ile	Pro	Leu	Gly	Arg	Ala	Glu	Leu	115	120	125	
Ile	Asp	Cys	Leu	Tyr	Glu	Asp	Glu	His	Leu	Ile	Ile	Val	Asn	Lys	Pro	130	135	140	
Glu	Gly	Met	Lys	Thr	His	Gly	Asn	Gln	Pro	Asn	Glu	Ile	Ala	Leu	Leu	145	150	155	160
Asn	His	Val	Ser	Ala	Tyr	Ser	Gly	Gln	Thr	Cys	Tyr	Val	Val	His	Arg	165	170	175	
Leu	Asp	Met	Glu	Thr	Ser	Gly	Ala	Val	Leu	Phe	Ala	Lys	Asn	Pro	Phe	180	185	190	

Ile Leu Pro Leu Ile Asn Gln Arg Leu Glu Arg Lys Glu Ile Trp Arg  
 195 200 205  
 Glu Tyr Trp Ala Leu Val Glu Gly Lys Phe Ser Pro Lys His Gln Val  
 210 215 220  
 Leu Arg Asp Lys Ile Gly Arg Asn Arg His Asp Arg Arg Lys Arg Ile  
 225 230 235 240  
 Ile Asp Ser Lys Asn Gly Gln His Ala Met Thr Ile Ile Asp Val Leu  
 245 250 255  
 Lys Tyr Ile Gln Asn Ser Ser Leu Ile Lys Cys Arg Leu Glu Thr Gly  
 260 265 270  
 Arg Thr His Gln Ile Arg Ile His Leu Ser His His Gly His Pro Leu  
 275 280 285  
 Ile Gly Asp Pro Leu Tyr Asn Pro Ser Ser Asn Asn Glu Arg Leu Met  
 290 295 300  
 Leu His Ala His Arg Leu Thr Leu Ser His Pro Leu Thr Cys Glu Thr  
 305 310 315 320  
 Ile Ser Val Glu Ala Pro Ser Ser Thr Phe Glu Lys Val Leu Asn Asn  
 325 330 335  
 Tyr Lys Lys Gly Val Gly  
 340

<210> 63  
 <211> 2052  
 <212> DNA  
 <213> Streptococcus agalactiae

<400> 63  
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 aatagcgatg aatttagaaa gacagcggga gaggatagag gttttgaaag ggataagttg 180  
 aggtcttttg atatcattcc taaggagat ttatcgacaa gtaatgtcat aggtaatacg 240  
 gacattgcta gtcagatatc gttgggcttt aaaaagaatg cgatgcagga acaccatctt 300  
 actaaaacat tctctcaaaa ggatggaaag ttatcgctctg ttatagaggg gatgcttgct 360  
 attggcaaaag agaaagtaga gaaagaaata aaatatagtg gtaatttatg gcaaaaatta 420  
 aaagctaagg cactgcct tgtttgctgt gttgataatt tgaattttga agatataaaa 480  
 tcttattttc aatattattg tcatctaaac catcagctca aattacctaa aggtgctata 540  
 ctttctgcta aaacagaagt atatagggga ggagattttg ggagaaaaaa taaagataat 600  
 gtgtttggtt accgtatccc ctcatatttg aaaacccaaa aagggaacttt acttgcgagg 660

gctgatgaaa gaattgagca agcttgtgat tggggaaaca taggaatggg tattcgccgt	720
agtgaggatg atgggtgtcac ttggggaaaa agagaaacta ttgtcaatct ccgtaataac	780
cctagagttc cgctagttac tagtggtgac tatagtggct cacctattaa tatggatatg	840
gcattagttc aagatactag ctccaagacg aaacgtatTT tttcaatata tgatatgttt	900
ccagaaggaa gaggcgttat tagtattgct aacacacctg aaaaagaata tacccaaatc	960
ggaggacagt cttatcttaa tttatataat aatggaaaga aatcgaagggt ttttactatc	1020
cgtgacaaag gtattgtata taattttaaa gggaaaaaga ctgattatca tgttataaca	1080
gaaactacta aaagtgacca ttcaaacta ggggatatTT ataagggaaa acagctactt	1140
ggaaatatat attttacaaa acataaaacg tcaccatttc gtttagcaaa atcaagctat	1200
gtgtggatgt catatagcga tgatgatggg aggacatggg catcacctag agatataaca	1260
gcaagtcttc gtcagaaagg catgaaatTT ttgggaatag gacctggaaa aggtatagtt	1320
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tctcatctaa gaggttcaca atcttcacgc ctaattttatt cagacgacca tggaaaaacg	1440
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aatggggaca ttaagttatt tatgaggaat ctaactggta acctagaagt agccacaagt	1620
aaagacggcg gggagacttg gcaaaaccat gttaaacgat ataaggaaat tcatgatgct	1680
tacgtccaac tatcagctat tcgctttgag catgacaaaa aagagtatat tttattagtg	1740
aatgctaattg ggccagggaa gaagtgccaa gatggatatg cacgtctagc gcaagttaat	1800
cgaaatggta gttttaagtg gttatatcac catcacattc aagatgggtc gtttgcttac	1860
aactctgttc aacaacttaa taatgatcaa tttggtgtcc tttatgaaca tagagaaaaa	1920
catcaaaata gttttacttt aaattacaaa gtttttaatt ggagttttct tagtcaaaat	1980
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<210> 64  
 <211> 683  
 <212> PRT  
 <213> Streptococcus agalactiae  
 <400> 64

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Glu	Ser	Ser	His	Ser	Ile	Ala	Glu	Gln	Gln	Arg	Phe	Leu	Ile	Glu	Ser	20	25	30	
Lys	Gly	Ser	Ser	Val	Ala	Leu	Leu	Asn	Ser	Asp	Glu	Phe	Arg	Lys	Thr	35	40	45	
Ala	Gly	Glu	Asp	Arg	Gly	Phe	Glu	Arg	Asp	Lys	Leu	Arg	Ser	Leu	Asp	50	55	60	
Ile	Ile	Pro	Lys	Gly	Asp	Leu	Ser	Thr	Ser	Asn	Val	Ile	Gly	Asn	Thr	65	70	75	80
Asp	Ile	Ala	Ser	Gln	Ile	Ser	Leu	Gly	Phe	Lys	Lys	Asn	Ala	Met	Gln	85	90	95	
Glu	His	His	Leu	Thr	Lys	Thr	Phe	Ser	Gln	Lys	Asp	Gly	Lys	Leu	Ser	100	105	110	
Ser	Val	Ile	Glu	Gly	Met	Leu	Ala	Ile	Gly	Lys	Glu	Lys	Val	Glu	Lys	115	120	125	
Glu	Ile	Lys	Tyr	Ser	Gly	Asn	Leu	Trp	Gln	Lys	Leu	Lys	Ala	Lys	Ala	130	135	140	
His	Cys	Leu	Val	Cys	Cys	Val	Asp	Asn	Leu	Asn	Phe	Glu	Asp	Ile	Lys	145	150	155	160
Ser	Tyr	Phe	Gln	Tyr	Tyr	Cys	His	Leu	Asn	His	Gln	Leu	Lys	Leu	Pro	165	170	175	
Lys	Gly	Ala	Ile	Leu	Ser	Ala	Lys	Thr	Glu	Val	Tyr	Arg	Gly	Gly	Asp	180	185	190	
Phe	Gly	Arg	Lys	Asn	Lys	Asp	Asn	Val	Phe	Gly	Tyr	Arg	Ile	Pro	Ser	195	200	205	
Leu	Leu	Lys	Thr	Gln	Lys	Gly	Thr	Leu	Leu	Ala	Gly	Ala	Asp	Glu	Arg	210	215	220	
Ile	Glu	Gln	Ala	Cys	Asp	Trp	Gly	Asn	Ile	Gly	Met	Val	Ile	Arg	Arg	225	230	235	240
Ser	Glu	Asp	Asp	Gly	Val	Thr	Trp	Gly	Lys	Arg	Glu	Thr	Ile	Val	Asn	245	250	255	
Leu	Arg	Asn	Asn	Pro	Arg	Val	Pro	Leu	Val	Thr	Ser	Gly	Asp	Tyr	Ser	260	265	270	
Gly	Ser	Pro	Ile	Asn	Met	Asp	Met	Ala	Leu	Val	Gln	Asp	Thr	Ser	Ser	275	280	285	
Lys	Thr	Lys	Arg	Ile	Phe	Ser	Ile	Tyr	Asp	Met	Phe	Pro	Glu	Gly	Arg	290	295	300	

Gly Val Ile Ser Ile Ala Asn Thr Pro Glu Lys Glu Tyr Thr Gln Ile																	
305				310					315							320	
Gly Gly Gln Ser Tyr Leu Asn Leu Tyr Asn Asn Gly Lys Lys Ser Lys				325				330							335		
Val Phe Thr Ile Arg Asp Lys Gly Ile Val Tyr Asn Phe Lys Gly Lys				340				345					350				
Lys Thr Asp Tyr His Val Ile Thr Glu Thr Thr Lys Ser Asp His Ser				355				360					365				
Asn Leu Gly Asp Ile Tyr Lys Gly Lys Gln Leu Leu Gly Asn Ile Tyr				370				375				380					
Phe Thr Lys His Lys Thr Ser Pro Phe Arg Leu Ala Lys Ser Ser Tyr				385				390				395				400	
Val Trp Met Ser Tyr Ser Asp Asp Asp Gly Arg Thr Trp Ser Ser Pro				405					410						415		
Arg Asp Ile Thr Ala Ser Leu Arg Gln Lys Gly Met Lys Phe Leu Gly				420				425					430				
Ile Gly Pro Gly Lys Gly Ile Val Leu Lys Trp Gly Pro His Ala Gly				435				440					445				
Arg Ile Ile Ile Pro Ala Tyr Ser Thr Asn Trp Lys Ser His Leu Arg				450				455				460					
Gly Ser Gln Ser Ser Arg Leu Ile Tyr Ser Asp Asp His Gly Lys Thr				465				470				475				480	
Trp His Thr Gly Lys Ala Val Asn Asp Asn Arg Ile Leu Ser Asn Gly				485					490						495		
Glu Lys Ile His Ser Leu Thr Met Asp Asn Lys Lys Glu Gln Asn Thr				500				505						510			
Glu Ser Val Pro Val Gln Leu Lys Asn Gly Asp Ile Lys Leu Phe Met				515				520				525					
Arg Asn Leu Thr Gly Asn Leu Glu Val Ala Thr Ser Lys Asp Gly Gly				530				535				540					
Glu Thr Trp Gln Asn His Val Lys Arg Tyr Lys Glu Ile His Asp Ala				545				550				555				560	
Tyr Val Gln Leu Ser Ala Ile Arg Phe Glu His Asp Lys Lys Glu Tyr				565					570						575		
Ile Leu Leu Val Asn Ala Asn Gly Pro Gly Lys Lys Cys Gln Asp Gly				580				585						590			
Tyr Ala Arg Leu Ala Gln Val Asn Arg Asn Gly Ser Phe Lys Trp Leu				595				600						605			

Tyr His His His Ile Gln Asp Gly Ser Phe Ala Tyr Asn Ser Val Gln  
610 615 620

Gln Leu Asn Asn Asp Gln Phe Gly Val Leu Tyr Glu His Arg Glu Lys  
625 630 635 640

His Gln Asn Ser Phe Thr Leu Asn Tyr Lys Val Phe Asn Trp Ser Phe  
645 650 655

Leu Ser Gln Asn Thr Glu Lys Gln Gly Thr Leu Trp Glu Lys Met Ala  
660 665 670

Ala Asn Trp His Val Leu Phe Lys Phe Tyr Leu  
675 680

<210> 65

<211> 1188

<212> DNA

<213> Streptococcus agalactiae

<400> 65

atgcctaaat taatcgtatc tttcctctgc attttattat ccctgacttg tgtaaactct	60
gtgcaagctg aagaacataa agatattatg caaattaccc gagaagccgg atatgatgtt	120
aaagatatta ataaacctaa agcgtctatc gttattgaca ataaagggtca tttttgtgg	180
gaagataacg ccgatttaga acgtgatccc gctagcatgt ctaaaatgtt tactttatat	240
ttactatttg aagacttagc taaaggaaaa acaaacctca acaccacagt gactgcaaca	300
gaaacagacc aagccataag taagatttat gaaattagta ataacaatat tcatgctggg	360
gttgcttata ctattcgtga actgattact atgacggctg tcccgtcatc taatgtagca	420
actattatga ttgctaacca cttatcacia aacaatcctg acgcctttat taaacgaatc	480
aatgaaaccg ccaagaaact cggtatgaca aaaactcact tttataaccc cagtggggcg	540
gtagcgagtg cttttaatgg actttactcc ccaaagaat acgataacaa tgctactaac	600
gttacgactg cacgtgatct atcaatttta acctatcatt tccttaaaaa ataccctgat	660
atactgaact atacaaaata tcctgaagtc aaggccatgg tcggaactcc ttatgaagaa	720
acattttacaa cttataacta ctctaccccc ggcgctaaat ttggattaga aggagtagat	780
ggcttaaaaa ctggttctag ccctagcgtt gcttttaatg ccttagttac agctaaacgc	840
cagaatactc gcttgataac tgtggtttta ggagttggcg attggtcaga ccaagacgga	900
gagtactatc gtcacccgtt tgtcaacgct cttgtagaaa aaggttttta agacgctaaa	960
aatatttctt ctaaaactcc tgtattaaaa gccgttaaac ctaaaaaaga agttactaaa	1020
acaaaaacta aatctattca agaacagcct caaacaaaag aacagtgggtg gacaaaaaca	1080



gatcaattta tccaatcaca ttttgtatct attttaattg ttctgggcac catcgctagc 1140  
ctttgtcttt tagctgggat agtattactt ataaaqcqct ctaqataa 1188

Met 1	Pro	Lys	Leu	Ile 5	Val	Ser	Phe	Leu	Cys 10	Ile	Leu	Leu	Ser	Leu	Thr 15
Cys	Val	Asn 20	Ser	Val	Gln	Ala	Glu	Glu 25	His	Lys	Asp	Ile	Met 30	Gln	Ile
Thr	Arg 35	Glu	Ala	Gly	Tyr	Asp	Val 40	Lys	Asp	Ile	Asn 45	Lys	Pro	Lys	Ala
Ser 50	Ile	Val	Ile	Asp	Asn 55	Lys	Gly	His	Ile	Leu	Trp 60	Glu	Asp	Asn	Ala
Asp 65	Leu	Glu	Arg	Asp 70	Pro	Ala	Ser	Met	Ser 75	Lys	Met	Phe	Thr	Leu	Tyr 80
Leu	Leu	Phe	Glu	Asp 85	Leu	Ala	Lys	Gly	Lys 90	Thr	Asn	Leu	Asn	Thr 95	Thr
Val	Thr	Ala	Thr 100	Glu	Thr	Asp	Gln	Ala 105	Ile	Ser	Lys	Ile	Tyr 110	Glu	Ile
Ser	Asn 115	Asn	Asn	Ile	His	Ala	Gly 120	Val	Ala	Tyr	Pro	Ile 125	Arg	Glu	Leu
Ile 130	Thr	Met	Thr	Ala	Val 135	Pro	Ser	Ser	Asn	Val 140	Ala	Thr	Ile	Met	Ile
Ala 145	Asn	His	Leu	Ser 150	Gln	Asn	Asn	Pro	Asp	Ala 155	Phe	Ile	Lys	Arg	Ile 160
Asn	Glu	Thr	Ala	Lys 165	Lys	Leu	Gly	Met	Thr 170	Lys	Thr	His	Phe	Tyr	Asn 175
Pro	Ser	Gly 180	Ala	Val	Ala	Ser	Ala	Phe 185	Asn	Gly	Leu	Tyr	Ser 190	Pro	Lys
Glu	Tyr 195	Asp	Asn	Asn	Ala	Thr	Asn 200	Val	Thr	Thr	Ala	Arg 205	Asp	Leu	Ser
Ile 210	Leu	Thr	Tyr	His	Phe 215	Leu	Lys	Lys	Tyr	Pro	Asp 220	Ile	Leu	Asn	Tyr
Thr 225	Lys	Tyr	Pro	Glu 230	Val	Lys	Ala	Met	Val	Gly 235	Thr	Pro	Tyr	Glu	Glu 240

Thr Phe Thr Thr Tyr Asn Tyr Ser Thr Pro Gly Ala Lys Phe Gly Leu  
 245 250 255  
 Glu Gly Val Asp Gly Leu Lys Thr Gly Ser Ser Pro Ser Ala Ala Phe  
 260 265 270  
 Asn Ala Leu Val Thr Ala Lys Arg Gln Asn Thr Arg Leu Ile Thr Val  
 275 280 285  
 Val Leu Gly Val Gly Asp Trp Ser Asp Gln Asp Gly Glu Tyr Tyr Arg  
 290 295 300  
 His Pro Phe Val Asn Ala Leu Val Glu Lys Gly Phe Lys Asp Ala Lys  
 305 310 315 320  
 Asn Ile Ser Ser Lys Thr Pro Val Leu Lys Ala Val Lys Pro Lys Lys  
 325 330 335  
 Glu Val Thr Lys Thr Lys Thr Lys Ser Ile Gln Glu Gln Pro Gln Thr  
 340 345 350  
 Lys Glu Gln Trp Trp Thr Lys Thr Asp Gln Phe Ile Gln Ser His Phe  
 355 360 365  
 Val Ser Ile Leu Ile Val Leu Gly Thr Ile Ala Ser Leu Cys Leu Leu  
 370 375 380  
 Ala Gly Ile Val Leu Leu Ile Lys Arg Ser Arg  
 385 390 395

<210> 67  
 <211> 984  
 <212> DNA  
 <213> Streptococcus agalactiae

<400> 67  
 atgactgaaa aatattataa ttgggcaacg cttggaaccg gcgttattgc caacgaatta 60  
 gcccaagcac tgggaagcacg tggacaaaaa ttatattctg tagctaataag aacttacgac 120  
 aaaggacttg aatttgctaa caaatatggt atccaaaaag tttatgatca catagatcaa 180  
 gtatttgaag accctgaagt ggatatcatt tatatctcta ctccccacaa tactcacatc 240  
 tcattttttac gaaaggcttt agcaaaggtt aagcacgttc tttgcgaaaa atctattact 300  
 ttaaatagta ctgagcttaa agaagccata gatttagccg aaactaacca tgttgtctta 360  
 gctgaagcca tgactatttt tcatatgcca atttaccgcc aattaaaaac attagttgat 420  
 agtggaaaat taggaccgtt aaaaatgatt caaatgaatt tcggaagtta taaagaatat 480  
 gatatgacta accgtttttt cagtcgtgac ctagcaggcg gtgctttgct ggacattggt 540  
 gtttatgcac tttcttgat tcgctgggtt atgtcagaag cacctcacia cattacctct 600  
 caagttacat ttgcaccaac aggggttgat gaacaagttg gtatcctact aaccaacca 660

gcaaattgaga tggcgactgt cagccttagt ttacatgcaa aacaacctaa acgagcaact 720  
atcgcttacg ataaaggcta cattgaactt tttgaatatc cgcgaggaca aaaggcagtt 780  
attacttata ctgaggatgg gcatcaagat attatcgaag ctggcaaaac tgaaaatgct 840  
ctccaatatg aggtagctga tatggaagaa gccatttcag gaaaaactaa ccacatgtac 900  
ttaaactata ccaaagatgt tatggatata atgacacagc tacgtcaaga atggggattt 960  
acctacccag aagaagaaaa atga 984

<210> 68  
<211> 327  
<212> PRT  
<213> Streptococcus agalactiae

<400> 68

Met	Thr	Glu	Lys	Tyr	Tyr	Asn	Trp	Ala	Thr	Leu	Gly	Thr	Gly	Val	Ile	
1			5						10					15		
Ala	Asn	Glu	Leu	Ala	Gln	Ala	Leu	Glu	Ala	Arg	Gly	Gln	Lys	Leu	Tyr	
			20					25					30			
Ser	Val	Ala	Asn	Arg	Thr	Tyr	Asp	Lys	Gly	Leu	Glu	Phe	Ala	Asn	Lys	
			35				40					45				
Tyr	Gly	Ile	Gln	Lys	Val	Tyr	Asp	His	Ile	Asp	Gln	Val	Phe	Glu	Asp	
	50					55				60						
Pro	Glu	Val	Asp	Ile	Ile	Tyr	Ile	Ser	Thr	Pro	His	Asn	Thr	His	Ile	
65				70					75					80		
Ser	Phe	Leu	Arg	Lys	Ala	Leu	Ala	Asn	Gly	Lys	His	Val	Leu	Cys	Glu	
				85					90					95		
Lys	Ser	Ile	Thr	Leu	Asn	Ser	Thr	Glu	Leu	Lys	Glu	Ala	Ile	Asp	Leu	
			100					105					110			
Ala	Glu	Thr	Asn	His	Val	Val	Leu	Ala	Glu	Ala	Met	Thr	Ile	Phe	His	
			115				120					125				
Met	Pro	Ile	Tyr	Arg	Gln	Leu	Lys	Thr	Leu	Val	Asp	Ser	Gly	Lys	Leu	
	130					135					140					
Gly	Pro	Leu	Lys	Met	Ile	Gln	Met	Asn	Phe	Gly	Ser	Tyr	Lys	Glu	Tyr	
145				150					155					160		
Asp	Met	Thr	Asn	Arg	Phe	Phe	Ser	Arg	Asp	Leu	Ala	Gly	Gly	Ala	Leu	
			165					170					175			
Leu	Asp	Ile	Gly	Val	Tyr	Ala	Leu	Ser	Cys	Ile	Arg	Trp	Phe	Met	Ser	
			180					185					190			

Glu Ala Pro His Asn Ile Thr Ser Gln Val Thr Phe Ala Pro Thr Gly  
 195 200 205  
 Val Asp Glu Gln Val Gly Ile Leu Leu Thr Asn Pro Ala Asn Glu Met  
 210 215 220  
 Ala Thr Val Ser Leu Ser Leu His Ala Lys Gln Pro Lys Arg Ala Thr  
 225 230 235 240  
 Ile Ala Tyr Asp Lys Gly Tyr Ile Glu Leu Phe Glu Tyr Pro Arg Gly  
 245 250 255  
 Gln Lys Ala Val Ile Thr Tyr Thr Glu Asp Gly His Gln Asp Ile Ile  
 260 265 270  
 Glu Ala Gly Lys Thr Glu Asn Ala Leu Gln Tyr Glu Val Ala Asp Met  
 275 280 285  
 Glu Glu Ala Ile Ser Gly Lys Thr Asn His Met Tyr Leu Asn Tyr Thr  
 290 295 300  
 Lys Asp Val Met Asp Ile Met Thr Gln Leu Arg Gln Glu Trp Gly Phe  
 305 310 315 320  
 Thr Tyr Pro Glu Glu Glu Lys  
 325

<210> 69  
 <211> 96  
 <212> DNA  
 <213> Streptococcus agalactiae

<400> 69  
 gtgtattctc ctgttaaadc ttctaaagga aaagtgatat tgttaaaaag tgattttcta 60  
 aagagcttca tagaaaggag aggaaatatt tgtttt 96

<210> 70  
 <211> 32  
 <212> PRT  
 <213> Streptococcus agalactiae

<400> 70

Met Tyr Ser Pro Val Lys Ser Ser Lys Gly Lys Val Ile Leu Leu Lys  
 1 5 10 15  
 Ser Asp Phe Leu Lys Ser Phe Ile Glu Arg Arg Gly Asn Ile Cys Phe  
 20 25 30

<210> 71  
 <211> 429  
 <212> DNA  
 <213> Streptococcus agalactiae

<400> 71

aaatactgta tcattgcaac ctcaaagca gggttttgaa acgaagcatt tacaggtgac 60  
 agcgataaag acttgaaaat tatggaacga atttctccat atttccgtcc agaatttcta 120  
 aatcgtttca atggtgttat tgaattctct cacctaagca aagatgactt aagcgaaatt 180  
 gtagatttga tgcttgatga agttaaccaa acaattggca aaaaaggaat tgaccttggt 240  
 gtagatgaaa atgttaaatac acacttaatt gaactggggt atgacgaagc aatggggagta 300  
 cgtccattgc gccgtgtcat cgagcaagaa attcgagatc gcatcacaga ctactatctc 360  
 gatcatacag acgttaaaca cctaaaagct aatttgcaag atggccaaat cgtcatttct 420  
 gaaagataa 429

<210> 72  
 <211> 142  
 <212> PRT  
 <213> Streptococcus agalactiae  
 <400> 72

Lys Tyr Cys Ile Ile Ala Thr Ser Asn Ala Gly Phe Gly Asn Glu Ala  
 1 5 10 15  
 Phe Thr Gly Asp Ser Asp Lys Asp Leu Lys Ile Met Glu Arg Ile Ser  
 20 25 30  
 Pro Tyr Phe Arg Pro Glu Phe Leu Asn Arg Phe Asn Gly Val Ile Glu  
 35 40 45  
 Phe Ser His Leu Ser Lys Asp Asp Leu Ser Glu Ile Val Asp Leu Met  
 50 55 60  
 Leu Asp Glu Val Asn Gln Thr Ile Gly Lys Lys Gly Ile Asp Leu Val  
 65 70 75 80  
 Val Asp Glu Asn Val Lys Ser His Leu Ile Glu Leu Gly Tyr Asp Glu  
 85 90 95  
 Ala Met Gly Val Arg Pro Leu Arg Arg Val Ile Glu Gln Glu Ile Arg  
 100 105 110  
 Asp Arg Ile Thr Asp Tyr Tyr Leu Asp His Thr Asp Val Lys His Leu  
 115 120 125  
 Lys Ala Asn Leu Gln Asp Gly Gln Ile Val Ile Ser Glu Arg  
 130 135 140

<210> 73  
 <211> 699  
 <212> DNA  
 <213> Streptococcus agalactiae  
 <400> 73

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atgtcaatga atttttcatt tttaccacaa tattggctct attttaatta tgggtgtgatg      60
gtaaccatta tgatttcaac atgtgttggt ttttttgga ctattatagg cgtgttaatt      120
gcttttagtaa agcgtactaa tttacatttt ctacacaatat tagctaattt ctatgtatgg      180
gtatttcgtg ggacaccgat ggtagttcaa attatgattg ctttcgcatg gatgcatttt      240
aacaatttac caacaattag ctttggtggt ttagatttag attttacacg acttttacct      300
ggtatcatta tcatttcctt aaatagtggg gcctatattt cggaaattgt acgtgcaggg      360
attgaggctg taccatctgg acaaatagaa gcagcttact cgttggggat tgcacctaaa      420
aatacacttc gctatgttat cttaccccaa gcttttaaaa atattttacc tgctctaggg      480
aatgaattta ttacaattat taaagatagt gctctccttc aaactattgg tgtcatggaa      540
ttatggaacg gagcacaatc agttgtaacg gctacttact caccagttgc accgttatta      600
tttgcagcat tttactattt aatggtgaca acgattctct cagctttggt aaaacaaatg      660
gagaaatata ttgggaaagg ggtaaaaata gatgggtga      699

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<210> 74
<211> 232
<212> PRT
<213> Streptococcus agalactiae

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<400> 74

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Met Ser Met Asn Phe Ser Phe Leu Pro Gln Tyr Trp Ser Tyr Phe Asn
1          5          10         15

Tyr Gly Val Met Val Thr Ile Met Ile Ser Thr Cys Val Val Phe Phe
          20         25         30

Gly Thr Ile Ile Gly Val Leu Ile Ala Leu Val Lys Arg Thr Asn Leu
          35         40         45

His Phe Leu Thr Ile Leu Ala Asn Phe Tyr Val Trp Val Phe Arg Gly
          50         55         60

Thr Pro Met Val Val Gln Ile Met Ile Ala Phe Ala Trp Met His Phe
65          70          75          80

Asn Asn Leu Pro Thr Ile Ser Phe Gly Val Leu Asp Leu Asp Phe Thr
          85          90          95

Arg Leu Leu Pro Gly Ile Ile Ile Ile Ser Leu Asn Ser Gly Ala Tyr
          100         105         110

Ile Ser Glu Ile Val Arg Ala Gly Ile Glu Ala Val Pro Ser Gly Gln
          115         120         125

Ile Glu Ala Ala Tyr Ser Leu Gly Ile Arg Pro Lys Asn Thr Leu Arg

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130	135	140
Tyr Val Ile Leu Pro Gln Ala Phe Lys Asn Ile Leu Pro Ala Leu Gly		
145	150	155 160
Asn Glu Phe Ile Thr Ile Ile Lys Asp Ser Ala Leu Leu Gln Thr Ile		
	165	170 175
Gly Val Met Glu Leu Trp Asn Gly Ala Gln Ser Val Val Thr Ala Thr		
	180	185 190
Tyr Ser Pro Val Ala Pro Leu Leu Phe Ala Ala Phe Tyr Tyr Leu Met		
	195	200 205
Leu Thr Thr Ile Leu Ser Ala Leu Leu Lys Gln Met Glu Lys Tyr Leu		
	210	215 220
Gly Lys Gly Val Lys Ile Asp Gly		
225	230	

<210> 75  
 <211> 678  
 <212> DNA  
 <213> Streptococcus agalactiae

<400> 75  
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 attttacata ttcttgtagc agctttattg agtgtagtta tttatgtttc ctatgcttat 120  
 acgcatagtg gaactgccta tagtaaaaag tttaatgttt cattaatgac attgacggtc 180  
 ttgactgcaa cagtaatgac cgttattggt aataatgtag ccttgtcatt gggtaggtgc 240  
 ggtgccttgt cagttgttcg ttttaggaca gccataaaag attcaagaga tacagtttat 300  
 attttttggga ccatagttgt tggatatctgt tgtgggtgctg gtgactatgt ggtagctgca 360  
 ttaggaagta gcgttatctt tatcttatta tgggttatgg gacgtgttaa aaacgagaat 420  
 cgtatgttat tgattgtgaa gtgcgataga aactagaag ttgatttaga aggaattttc 480  
 ttccaatatt ttgacggaaa agctgttcag cgtgttaaaa attcaacaac taatactatt 540  
 gaaatgattt tcgaaatctc tagaaaagat tacgataagc aactccatgt agataatcag 600  
 ttaactgaaa aagtgtacca attgggaaat attgattatt tcaacattgt tagccaaagc 660  
 gacgaaatca atgggtag 678

<210> 76  
 <211> 225  
 <212> PRT  
 <213> Streptococcus agalactiae

<400> 76

Met Lys Asp Leu Leu Arg Asn Ser Leu Glu Gln Ser Gly Asn Leu Ser  
 1 5 10 15  
 Phe Gln Asp Met Ile Leu His Ile Leu Val Ala Ala Leu Leu Ser Val  
 20 25 30  
 Val Ile Tyr Val Ser Tyr Ala Tyr Thr His Ser Gly Thr Ala Tyr Ser  
 35 40 45  
 Lys Lys Phe Asn Val Ser Leu Met Thr Leu Thr Val Leu Thr Ala Thr  
 50 55 60  
 Val Met Thr Val Ile Gly Asn Asn Val Ala Leu Ser Leu Gly Met Val  
 65 70 75 80  
 Gly Ala Leu Ser Val Val Arg Phe Arg Thr Ala Ile Lys Asp Ser Arg  
 85 90 95  
 Asp Thr Val Tyr Ile Phe Trp Thr Ile Val Val Gly Ile Cys Cys Gly  
 100 105 110  
 Val Gly Asp Tyr Val Val Ala Ala Leu Gly Ser Ser Val Ile Phe Ile  
 115 120 125  
 Leu Leu Trp Val Met Gly Arg Val Lys Asn Glu Asn Arg Met Leu Leu  
 130 135 140  
 Ile Val Lys Cys Asp Arg Thr Leu Glu Val Asp Leu Glu Gly Ile Phe  
 145 150 155 160  
 Phe Gln Tyr Phe Asp Gly Lys Ala Val Gln Arg Val Lys Asn Ser Thr  
 165 170 175  
 Thr Asn Thr Ile Glu Met Ile Phe Glu Ile Ser Arg Lys Asp Tyr Asp  
 180 185 190  
 Lys Gln Leu His Val Asp Asn Gln Leu Thr Glu Lys Val Tyr Gln Leu  
 195 200 205  
 Gly Asn Ile Asp Tyr Phe Asn Ile Val Ser Gln Ser Asp Glu Ile Asn  
 210 215 220

Gly  
225

<210> 77  
 <211> 499  
 <212> DNA  
 <213> Streptococcus agalactiae

<400> 77  
 aaaaattcat ttttagattca ttttacgact atatactcag aagtaccaaa cctaataccaa 60  
 gggttgaaaa aagaaagaag gaagtcagta tgacaaacta taaaaacaac tttaaagatg 120  
 aggctatacg tgttgaagag acaacaaaag aatcatttta cgatgttgat attgccttgt 180



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tttcagctgg tggatctatt tcagcaaagt tcgctcctta tgcagtaaag tctggagcag      240
ttgtagtaga taacacgtca tattttcgtc agaatcctga tgttccacta gttgttcctg      300
aagtaaattgc tcatgccatg attggtcata atggtatcat agcttgtccc aattgttcta      360
ctattcaaat gatgattgct ttagagccca ttcgtcaaaa atgggggata gagcgtgtta      420
tagtttccac ctatcaagct gtttcgggtt caggtgcacg tgctgttgaa gaaactaagg      480
aacagttgag acaagtttt                                     499

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<210> 78
<211> 165
<212> PRT
<213> Streptococcus agalactiae

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<400> 78

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Lys Phe Ile Leu Asp Ser Phe Tyr Asp Tyr Ile Leu Arg Ser Thr Lys
1             5             10             15

Pro Asn Pro Arg Phe Glu Lys Arg Lys Lys Glu Val Ser Met Thr Asn
      20             25             30

Tyr Lys Asn Asn Phe Lys Asp Glu Ala Ile Arg Val Glu Glu Thr Thr
      35             40             45

Lys Glu Ser Phe Tyr Asp Val Asp Ile Ala Leu Phe Ser Ala Gly Gly
      50             55             60

Ser Ile Ser Ala Lys Phe Ala Pro Tyr Ala Val Lys Ser Gly Ala Val
65             70             75             80

Val Val Asp Asn Thr Ser Tyr Phe Arg Gln Asn Pro Asp Val Pro Leu
      85             90             95

Val Val Pro Glu Val Asn Ala His Ala Met Ile Gly His Asn Gly Ile
      100            105            110

Ile Ala Cys Pro Asn Cys Ser Thr Ile Gln Met Met Ile Ala Leu Glu
      115            120            125

Pro Ile Arg Gln Lys Trp Gly Ile Glu Arg Val Ile Val Ser Thr Tyr
      130            135            140

Gln Ala Val Ser Gly Ser Gly Ala Arg Ala Val Glu Glu Thr Lys Glu
145            150            155            160

Gln Leu Arg Gln Val
      165

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<210> 79
<211> 456
<212> DNA

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<213> Streptococcus agalactiae

<400> 79

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atgacaaatg aattgataat gcaagctttt gagtgggtatt tacctagtga tgggaatcac      60
tggaagaaat tagaggagtc tatatcagac cttaaaaaaac ttggaattag taaaatctgg      120
ttaccaccag catttaaggg aactagcagt gatgatgtag gatatgggtgt ttatgatctc      180
tttgatttag gagaatttga ccagaatgga acaattagaa caaaatatgg taggaaagaa      240
gagtatctaa agcttattaa gtcgttaaag gcaaattggca ttaaaccggt tgcagatatc      300
gttccttaacc ataaagccaa tggatgatcat aaagaaaaat ttcaagtcac caaagtcaat      360
cctgaaaatc gtcaagaagc attaagttaa ccctatgaga ttgaaggatg gacgggattt      420
gatttcccag gtagacaggg tgagtacaat gattttt                                456
```

<210> 80

<211> 152

<212> PRT

<213> Streptococcus agalactiae

<400> 80

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Met Thr Asn Glu Leu Ile Met Gln Ala Phe Glu Trp Tyr Leu Pro Ser
1           5           10           15

Asp Gly Asn His Trp Lys Lys Leu Glu Glu Ser Ile Ser Asp Leu Lys
          20           25           30

Lys Leu Gly Ile Ser Lys Ile Trp Leu Pro Pro Ala Phe Lys Gly Thr
          35           40           45

Ser Ser Asp Asp Val Gly Tyr Gly Val Tyr Asp Leu Phe Asp Leu Gly
          50           55           60

Glu Phe Asp Gln Asn Gly Thr Ile Arg Thr Lys Tyr Gly Arg Lys Glu
65           70           75           80

Glu Tyr Leu Lys Leu Ile Lys Ser Leu Lys Ala Asn Gly Ile Lys Pro
          85           90           95

Phe Ala Asp Ile Val Leu Asn His Lys Ala Asn Gly Asp His Lys Glu
          100          105          110

Lys Phe Gln Val Ile Lys Val Asn Pro Glu Asn Arg Gln Glu Ala Leu
          115          120          125

Ser Glu Pro Tyr Glu Ile Glu Gly Trp Thr Gly Phe Asp Phe Pro Gly
          130          135          140

Arg Gln Gly Glu Tyr Asn Asp Phe
145          150
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<210> 81  
 <211> 516  
 <212> DNA  
 <213> Streptococcus agalactiae

<400> 81  
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 actgctcttt cggacacaaa taaagataaa gtcactacta tttctattga cgagattcaa 180  
 aaaagcttag aaggtaagaa gccgattact gttagttttg atattgatga tacactgctt 240  
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 cttcataaac aaaaattctg ggatcttggt gcaaaacgag gagatcaaga ttccattccc 360  
 aaagaatatg ctaaaaaatt aattgctatg catcaaaaac gaggagataa aattgttttt 420  
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<210> 82  
 <211> 172  
 <212> PRT  
 <213> Streptococcus agalactiae

<400> 82  
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 Val Ala Tyr Thr Gln Glu Gly Met Thr Ala Leu Ser Asp Thr Asn Lys  
 35 40 45  
 Asp Lys Val Thr Thr Ile Ser Ile Asp Glu Ile Gln Lys Ser Leu Glu  
 50 55 60  
 Gly Lys Lys Pro Ile Thr Val Ser Phe Asp Ile Asp Asp Thr Leu Leu  
 65 70 75 80  
 Phe Ser Ser Gln Tyr Phe Gln Tyr Gly Lys Glu Tyr Val Thr Pro Gly  
 85 90 95  
 Ser Phe Asp Phe Leu His Lys Gln Lys Phe Trp Asp Leu Val Ala Lys  
 100 105 110  
 Arg Gly Asp Gln Asp Ser Ile Pro Lys Glu Tyr Ala Lys Lys Leu Ile  
 115 120 125  
 Ala Met His Gln Lys Arg Gly Asp Lys Ile Val Phe Ile Thr Gly Arg

130                      135                      140  
 Thr Arg Gly Ser Met Tyr Lys Glu Gly Glu Val Asp Lys Thr Ala Lys  
 145                      150                      155                      160  
 Ala Leu Ala Lys Asp Phe Lys Phe Val Pro Ser Asp  
                     165                      170  
  
 <210> 83  
 <211> 516  
 <212> DNA  
 <213> Streptococcus agalactiae  
  
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 <210> 84  
 <211> 171  
 <212> PRT  
 <213> Streptococcus agalactiae  
  
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                     20                      25                      30  
 Arg Met Cys Phe Gly Pro Gln Ile Met Ile Glu Gly Val Ser Thr Pro  
                     35                      40                      45  
 Asn Val Gln Arg Phe Gly Arg Ile Val Ala Leu Leu Val Pro Phe Asn  
                     50                      55                      60  
 Ser Phe Arg Ser Leu Asp Gln Leu Thr Ser Phe Lys Glu Ile Leu Trp  
 65                      70                      75                      80  
 Val Ile Gly Gln Asn Val Val Asn Ile Leu Leu Leu Phe Pro Leu Ile  
                     85                      90                      95

Ile Gly Leu Leu Ser Leu Lys Pro Ser Leu Arg Lys Tyr Lys Ser Val  
100 105 110

Ile Leu Leu Ala Phe Leu Met Ser Leu Phe Ile Glu Cys Thr Gln Val  
115 120 125

Val Leu Asp Ile Leu Ile Asp Ala Asn Arg Val Phe Glu Ile Asp Asp  
130 135 140

Leu Trp Thr Asn Thr Leu Gly Gly Pro Phe Ala Leu Trp Ser Tyr Arg  
145 150 155 160

Asn Ile Lys Gly Trp Leu Leu Thr Ile Arg Lys  
165 170

<210> 85  
<211> 627  
<212> DNA  
<213> Streptococcus agalactiae

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atccatgaat atattttaca ggaatcagt gggcaattat tggtaaacct ttcagaggaa 180  
gagcaaatac ctcatgaaaa actgaaagca tattttacaa aagaacaaga aagtcgagat 240  
tctaaaatac atttaatgcc atatgcaaaa gagatttttag aatggaccaa agaacaagat 300  
attcccaatt ttatgtatac acataaagga gcaagtacgc attcagtgtt ggaaaccttg 360  
cagatctctc attattttga tgaaatttta actggtggtt cgggattcga gcgaaaacca 420  
catccacaag ggattaatta tttagttaaa cgatattctt tagataaatc aatgacttat 480  
tacataggag atcgtccact agatttggag gttgctcaaa atgctggtat aaaatccata 540  
aacttaaggt tagagaattc caaagaaaac tataatattt caagtctcaa agatataata 600  
tcacttgatt tcactcgttt ggattaa 627

<210> 86  
<211> 208  
<212> PRT  
<213> Streptococcus agalactiae

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20 25 30

Gly Leu Ile Phe Asp Lys Glu Leu Ile His Glu Tyr Ile Leu Gln Glu  
 35 40 45  
 Ser Val Gly Gln Leu Leu Val Asn Leu Ser Glu Glu Glu Gln Ile Pro  
 50 55 60  
 His Glu Lys Leu Lys Ala Tyr Phe Thr Lys Glu Gln Glu Ser Arg Asp  
 65 70 75 80  
 Ser Lys Ile His Leu Met Pro Tyr Ala Lys Glu Ile Leu Glu Trp Thr  
 85 90 95  
 Lys Glu Gln Asp Ile Pro Asn Phe Met Tyr Thr His Lys Gly Ala Ser  
 100 105 110  
 Thr His Ser Val Leu Glu Thr Leu Gln Ile Ser His Tyr Phe Asp Glu  
 115 120 125  
 Ile Leu Thr Gly Val Ser Gly Phe Glu Arg Lys Pro His Pro Gln Gly  
 130 135 140  
 Ile Asn Tyr Leu Val Lys Arg Tyr Ser Leu Asp Lys Ser Met Thr Tyr  
 145 150 155 160  
 Tyr Ile Gly Asp Arg Pro Leu Asp Leu Glu Val Ala Gln Asn Ala Gly  
 165 170 175  
 Ile Lys Ser Ile Asn Leu Arg Leu Glu Asn Ser Lys Glu Asn Tyr Asn  
 180 185 190  
 Ile Ser Ser Leu Lys Asp Ile Ile Ser Leu Asp Phe Thr Arg Leu Asp  
 195 200 205

<210> 87  
 <211> 1356  
 <212> DNA  
 <213> Streptococcus agalactiae

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 atgcttattg cttgggtaat tactgctatc gggatgggaa ctttcgtttt aagttttcaa 180  
 aatttatctg aaaaaaggcc ggacctaaac gctggaatct ttagttacgc taaagagggg 240  
 tttggaaact ttatgggatt taactctgca tggggttatt gggtatcagc ttggcttgga 300  
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 aatggaaata atatcatctc aattattgga gcaagtatag ttatttgggt tgtccatttc 420  
 ttaattttta gaggtgttaa tacagctgca tttattaata ccgtagttac ctttgcaaaa 480  
 ttagtacctg ttattatttt cttaatttca gcgttattag ctttcaaatt taacattttt 540

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agtcttgata tctggggaaa tggattacat caatcaatth tcaaccaagt caattcaact    600
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gctaaaaaac actctgatat tggtaaagca agtatcctag cattattcac tatgatttca    720
ctttatgtat tgatttctgt tttatcactt ggtatcatgt cacgtccaga acttgcaaac    780
ttaaaaaacac cagctatggc ttacgttcta gaaaaagctg ttggtcactg ggggtgctatc    840
ttagttaacc ttggtgttat catttcagta tttggcgcta ttcttgcttg gactttatth    900
gcagcagaat taccatatca agctgctaaa gaaggtgctt ttcctaaatt ttttgcaaaa    960
gaaaataaaa acaaagctcc aatcaactca ctcttagtca ctaatcttg tgtacaagca   1020
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tatgctgtth accttatcta cgctgggtgg tttgattact tacttttgac aatgattgct   1260
tatactctag gtatgattct ctatattaaa atgagaaaag atgacaagct tggcgtaath   1320
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<210> 88
<211> 452
<212> PRT
<213> Streptococcus agalactiae

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<400> 88
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Ile Gly Ser Leu Ile Gly Gly Gly Ile Phe Asp Leu Met Gln Asn Met
          20              25              30

Ser Ser Arg Ala Gly Leu Val Pro Met Leu Ile Ala Trp Val Ile Thr
          35              40              45

Ala Ile Gly Met Gly Thr Phe Val Leu Ser Phe Gln Asn Leu Ser Glu
          50              55              60

Lys Arg Pro Asp Leu Thr Ala Gly Ile Phe Ser Tyr Ala Lys Glu Gly
65              70              75              80

Phe Gly Asn Phe Met Gly Phe Asn Ser Ala Trp Gly Tyr Trp Leu Ser
          85              90              95

Ala Trp Leu Gly Asn Val Ala Tyr Ala Ala Leu Leu Phe Ser Ser Leu
          100             105             110

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	130					135					140						
Gly	Val	Asn	Thr	Ala	Ala	Phe	Ile	Asn	Thr	Val	Val	Thr	Phe	Ala	Lys		
145					150					155					160		
Leu	Val	Pro	Val	Ile	Ile	Phe	Leu	Ile	Ser	Ala	Leu	Leu	Ala	Phe	Lys		
				165					170					175			
Phe	Asn	Ile	Phe	Ser	Leu	Asp	Ile	Trp	Gly	Asn	Gly	Leu	His	Gln	Ser		
			180					185					190				
Ile	Phe	Asn	Gln	Val	Asn	Ser	Thr	Met	Lys	Thr	Ala	Val	Trp	Val	Phe		
		195					200					205					
Ile	Gly	Ile	Glu	Gly	Ala	Val	Val	Phe	Ser	Gly	Arg	Ala	Lys	Lys	His		
	210					215					220						
Ser	Asp	Ile	Gly	Lys	Ala	Ser	Ile	Leu	Ala	Leu	Phe	Thr	Met	Ile	Ser		
225					230					235					240		
Leu	Tyr	Val	Leu	Ile	Ser	Val	Leu	Ser	Leu	Gly	Ile	Met	Ser	Arg	Pro		
				245					250					255			
Glu	Leu	Ala	Asn	Leu	Lys	Thr	Pro	Ala	Met	Ala	Tyr	Val	Leu	Glu	Lys		
			260					265					270				
Ala	Val	Gly	His	Trp	Gly	Ala	Ile	Leu	Val	Asn	Leu	Gly	Val	Ile	Ile		
		275					280					285					
Ser	Val	Phe	Gly	Ala	Ile	Leu	Ala	Trp	Thr	Leu	Phe	Ala	Ala	Glu	Leu		
	290					295					300						
Pro	Tyr	Gln	Ala	Ala	Lys	Glu	Gly	Ala	Phe	Pro	Lys	Phe	Phe	Ala	Lys		
305					310					315					320		
Glu	Asn	Lys	Asn	Lys	Ala	Pro	Ile	Asn	Ser	Leu	Leu	Val	Thr	Asn	Leu		
				325					330					335			
Cys	Val	Gln	Ala	Phe	Leu	Ile	Thr	Phe	Leu	Phe	Thr	Gln	Ser	Ala	Tyr		
			340					345					350				
Arg	Phe	Gly	Phe	Ala	Leu	Ala	Ser	Ser	Ala	Ile	Leu	Ile	Pro	Tyr	Ala		
		355					360					365					
Phe	Thr	Ala	Leu	Tyr	Gln	Leu	Gln	Phe	Thr	Leu	Arg	Glu	Asp	Lys	Ser		
	370					375					380						
Thr	Pro	Gly	His	Gln	Lys	Asn	Leu	Ile	Ile	Gly	Ile	Leu	Ala	Thr	Ile		
385					390					395					400		
Tyr	Ala	Val	Tyr	Leu	Ile	Tyr	Ala	Gly	Gly	Phe	Asp	Tyr	Leu	Leu	Leu		
				405					410					415			



Thr Met Ile Ala Tyr Thr Leu Gly Met Ile Leu Tyr Ile Lys Met Arg  
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Lys Asp Asp Lys Leu Gly Val Ile Met Val Ile Ala Val Ser Ser Val  
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Lys Leu Leu Ser  
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<210> 89  
<211> 1134  
<212> DNA  
<213> Streptococcus agalactiae

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cgattatata taaagctttt taaaggatct agactattaa tggcaatcaa gcgtagtggt 240  
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<210> 90  
<211> 377

<212> PRT

<213> Streptococcus agalactiae

<400> 90

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			20					25					30			
Thr	Thr	Leu	His	Lys	Ala	Ile	Phe	Pro	Phe	Leu	Met	Gly	Ala	Gly	Ile	
			35				40					45				
Ala	Tyr	Ile	Ile	Asn	Ile	Val	Met	Ser	Val	Tyr	Glu	Arg	Leu	Tyr	Ile	
	50					55					60					
Lys	Leu	Phe	Lys	Gly	Ser	Arg	Leu	Leu	Met	Ala	Ile	Lys	Arg	Ser	Val	
65					70					75					80	
Ser	Met	Ile	Leu	Ser	Tyr	Ala	Thr	Phe	Ile	Gly	Leu	Ile	Val	Trp	Leu	
				85					90					95		
Phe	Ser	Ile	Val	Ile	Pro	Asp	Leu	Ile	Ser	Ser	Leu	Ser	Ser	Leu	Leu	
			100					105						110		
Val	Ile	Asp	Thr	Gly	Ala	Leu	Ala	Lys	Leu	Val	Asn	Asn	Leu	Asn	Glu	
		115					120					125				
Asn	Lys	Gln	Ile	Ser	Glu	Ala	Leu	Asn	Tyr	Met	Gly	Thr	Asp	Lys	Asp	
	130					135					140					
Leu	Val	Ser	Thr	Leu	Ser	Gly	Tyr	Ser	Gln	Gln	Ile	Leu	Lys	Gln	Val	
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Leu	Ser	Val	Leu	Thr	Asn	Leu	Leu	Thr	Ser	Val	Ser	Ser	Ile	Ala	Ala	
				165					170					175		
Thr	Leu	Leu	Asn	Val	Phe	Val	Ser	Phe	Ile	Phe	Ser	Ile	Tyr	Val	Leu	
			180					185					190			
Ala	Asn	Lys	Glu	Gln	Leu	Gly	Arg	Gln	Phe	Asn	Leu	Leu	Ile	Asp	Thr	
		195					200					205				
Tyr	Leu	Gly	Ser	Thr	Gly	Lys	Thr	Phe	His	Tyr	Val	Arg	His	Ile	Leu	
	210					215						220				
His	Gln	Arg	Phe	His	Gly	Phe	Phe	Val	Ser	Gln	Thr	Leu	Glu	Ala	Met	
225					230					235					240	
Ile	Leu	Gly	Ser	Leu	Thr	Val	Ile	Gly	Met	Leu	Ile	Phe	Gln	Phe	Pro	
				245					250					255		
Tyr	Ala	Leu	Thr	Val	Gly	Val	Leu	Val	Ala	Phe	Thr	Ala	Leu	Ile	Pro	
			260					265					270			
Val	Val	Gly	Ala	Tyr	Ile	Gly	Val	Thr	Ile	Gly	Phe	Ile	Leu	Ile	Ala	

275	280	285
Thr Glu Ser Leu Thr Glu Ala Phe Leu Phe Val Leu Phe Leu Ile Leu		
290	295	300
Leu Gln Gln Phe Glu Gly Asn Val Ile Tyr Pro Lys Val Val Gly Gly		
305	310	315
Ser Ile Gly Leu Pro Ser Met Trp Val Leu Met Ala Ile Thr Ile Gly		
325	330	335
Gly Ala Leu Trp Gly Ile Leu Gly Met Leu Leu Ala Val Pro Val Ala		
340	345	350
Ala Thr Ile Tyr Gln Ile Val Lys Asp His Ile Ile Lys Arg Gln Thr		
355	360	365
Leu Arg Asn Arg Ala Arg Thr Tyr Arg		
370	375	

<210> 91  
 <211> 1386  
 <212> DNA  
 <213> Streptococcus agalactiae

<400> 91	
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ggtaataata aacttattgc cgatttaggc tcagaaaagc gtgaaagtgt tagtgcggtat	240
agcattccac taaatttggt taacgctata acttctatag aagataaacg tttctttaa	300
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aatacgcaag gtggttcaac ccttgatcaa cagttgatta aactggctta ctttctacc	420
aataaatctg accaaacggt aaaacgtaaa tcacaggaag tttggcttgc gcttcaaagt	480
gagcgtaaata acaccaaaga agaaattctt actttctata ttaataaagt ttatatggga	540
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<210> 92  
<211> 462  
<212> PRT  
<213> Streptococcus agalactiae

<400> 92

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Leu Leu Phe Ala Tyr Tyr Val Ser Arg Ser Pro Lys Leu Thr Asp Gln  
35 40 45  
Ala Leu Lys Ser Val Asn Ser Ser Leu Val Tyr Asp Gly Asn Asn Lys  
50 55 60  
Leu Ile Ala Asp Leu Gly Ser Glu Lys Arg Glu Ser Val Ser Ala Asp  
65 70 75 80  
Ser Ile Pro Leu Asn Leu Val Asn Ala Ile Thr Ser Ile Glu Asp Lys  
85 90 95  
Arg Phe Phe Lys His Arg Gly Val Asp Ile Tyr Arg Ile Leu Gly Ala  
100 105 110  
Ala Trp His Asn Leu Val Ser Ser Asn Thr Gln Gly Gly Ser Thr Leu  
115 120 125  
Asp Gln Gln Leu Ile Lys Leu Ala Tyr Phe Ser Thr Asn Lys Ser Asp  
130 135 140  
Gln Thr Leu Lys Arg Lys Ser Gln Glu Val Trp Leu Ala Leu Gln Met  
145 150 155 160  
Glu Arg Lys Tyr Thr Lys Glu Glu Ile Leu Thr Phe Tyr Ile Asn Lys  
165 170 175

Val	Tyr	Met	Gly	Asn	Gly	Asn	Tyr	Gly	Met	Arg	Thr	Thr	Ala	Lys	Ser		
			180					185					190				
Tyr	Phe	Gly	Lys	Asp	Leu	Lys	Glu	Leu	Ser	Ile	Ala	Gln	Leu	Ala	Leu		
		195					200					205					
Leu	Ala	Gly	Ile	Pro	Gln	Ala	Pro	Thr	Gln	Tyr	Asp	Pro	Tyr	Lys	Asn		
	210					215					220						
Pro	Glu	Ser	Ala	Gln	Thr	Arg	Arg	Asn	Thr	Val	Leu	Gln	Gln	Met	Tyr		
225					230					235					240		
Gln	Asp	Lys	Asn	Ile	Ser	Lys	Lys	Glu	Tyr	Asp	Gln	Ala	Val	Ala	Thr		
			245						250					255			
Pro	Val	Thr	Asp	Gly	Leu	Lys	Glu	Leu	Lys	Gln	Lys	Ser	Thr	Tyr	Pro		
			260					265						270			
Lys	Tyr	Met	Asp	Asn	Tyr	Leu	Lys	Gln	Val	Ile	Ser	Glu	Val	Lys	Gln		
		275					280					285					
Lys	Thr	Gly	Lys	Asp	Ile	Phe	Thr	Ala	Gly	Leu	Lys	Val	Tyr	Thr	Asn		
	290					295					300						
Ile	Asn	Thr	Asp	Ala	Gln	Lys	Gln	Leu	Tyr	Asp	Ile	Tyr	Asn	Ser	Asp		
305					310					315					320		
Thr	Tyr	Ile	Ala	Tyr	Pro	Asn	Asn	Glu	Leu	Gln	Ile	Ala	Ser	Thr	Ile		
			325						330					335			
Met	Asp	Ala	Thr	Asn	Gly	Lys	Val	Ile	Ala	Gln	Leu	Gly	Gly	Arg	His		
			340					345					350				
Gln	Asn	Glu	Asn	Ile	Ser	Phe	Gly	Thr	Asn	Gln	Ser	Val	Leu	Thr	Asp		
	355						360					365					
Arg	Asp	Trp	Gly	Ser	Thr	Met	Lys	Pro	Ile	Ser	Ala	Tyr	Ala	Pro	Ala		
	370					375					380						
Ile	Asp	Ser	Gly	Val	Tyr	Asn	Ser	Thr	Gly	Gln	Ser	Leu	Asn	Asp	Ser		
385					390					395				400			
Val	Tyr	Tyr	Trp	Pro	Gly	Thr	Ser	Thr	Gln	Leu	Tyr	Asp	Trp	Asp	Arg		
			405						410					415			
Gln	Tyr	Met	Gly	Trp	Met	Ser	Met	Gln	Thr	Ala	Ile	Gln	Gln	Ser	Arg		
		420						425					430				
Asn	Val	Pro	Ala	Val	Arg	Ala	Leu	Glu	Ala	Ala	Gly	Leu	Asp	Glu	Ala		
		435					440					445					
Lys	Ser	Phe	Leu	Glu	Lys	Leu	Gly	Ile	Tyr	Tyr	Pro	Glu	Met				
	450					455					460						

<210> 93

<211> 336

<212> DNA

<213> Streptococcus agalactiae

<400> 93

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taccaagcag ttttaactgc aaaagcagct attgaaaatg atgcggatgc acaagtgcct      120
tggcaagact ttttggctac ccaatcaaaa gttcaagaaa tgatgcaatc tggccaaatg      180
ccaagtcaag aagaacaaga tgaaatgtct aaacttgggg aaaaaattga atccaatgac      240
cttttaaaag tttattttga ccaacaacaa cggttgctct tctatatgtc tgatatcgaa      300
aaaattgtct ttgcacccat gcaggacttg atgtaa                                336
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<210> 94

<211> 111

<212> PRT

<213> Streptococcus agalactiae

<400> 94

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1              5              10              15

Ala Leu Pro Glu Tyr Gln Ala Val Leu Thr Ala Lys Ala Ala Ile Glu
              20              25              30

Asn Asp Ala Asp Ala Gln Val Leu Trp Gln Asp Phe Leu Ala Thr Gln
              35              40              45

Ser Lys Val Gln Glu Met Met Gln Ser Gly Gln Met Pro Ser Gln Glu
              50              55              60

Glu Gln Asp Glu Met Ser Lys Leu Gly Glu Lys Ile Glu Ser Asn Asp
65              70              75              80

Leu Leu Lys Val Tyr Phe Asp Gln Gln Gln Arg Leu Ser Val Tyr Met
              85              90              95

Ser Asp Ile Glu Lys Ile Val Phe Ala Pro Met Gln Asp Leu Met
              100             105             110
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<210> 95

<211> 230

<212> DNA

<213> Streptococcus agalactiae

<400> 95

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cttcgcgaaa aaggatatgc taaagcagct aaaaagcag accgtgttgc tgctgaaggt      180
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ttaacaggtg tttatgttga tggtaacggt gcagcagtta ttgaagttaa

230

<210> 96

<211> 76

<212> PRT

<213> Streptococcus agalactiae

<400> 96

Met Ala Glu Ile Thr Ala Lys Leu Val Lys Glu Leu Arg Glu Lys Ser  
1 5 10 15

Gly Ala Gly Val Met Asp Ala Lys Lys Ala Leu Val Glu Thr Asp Gly  
20 25 30

Asp Leu Asp Lys Ala Ile Glu Leu Leu Arg Glu Lys Gly Met Ala Lys  
35 40 45

Ala Ala Lys Lys Ala Asp Arg Val Ala Ala Glu Gly Leu Thr Gly Val  
50 55 60

Tyr Val Asp Gly Asn Val Ala Ala Val Ile Glu Val  
65 70 75

<210> 97

<211> 134

<212> DNA

<213> Streptococcus agalactiae

<400> 97

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aattatTTTT cttgtataat taaatatatt atttcttatac aggagggttat gatgacatta 120

gagaaacgat ttaa 134

<210> 98

<211> 44

<212> PRT

<213> Streptococcus agalactiae

<400> 98

Met Ile Lys Asn Leu Leu Leu Thr Gly Phe Leu Ser Phe Asn Asp Gly  
1 5 10 15

Lys Leu Asp Thr Asn Tyr Phe Ser Cys Ile Ile Lys Tyr Ile Ile Ser  
20 25 30

Tyr Gln Glu Val Met Met Thr Leu Glu Lys Arg Phe  
35 40

<210> 99

<211> 94

<212> DNA

<213> Streptococcus agalactiae

<400> 99

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attgcgggta ttacaacctt tcaatactat ttaa 94

<210> 100

<211> 31

<212> PRT

<213> Streptococcus agalactiae

<400> 100

Met Lys Asn Asn Lys Asn Asn Gly Phe Leu Lys Asn Ser Phe Ile Tyr  
1 5 10 15

Ile Leu Leu Ile Ile Ala Val Ile Thr Thr Phe Gln Tyr Tyr Leu  
20 25 30

<210> 101

<211> 158

<212> DNA

<213> Streptococcus agalactiae

<400> 101

atgttagata ttatcttatac cggaatttcg caaggattac tttggtaaat tatggcaatt 60

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cctatggggg ctgcagtttg cgccttatgt atcgtaa 158

<210> 102

<211> 52

<212> PRT

<213> Streptococcus agalactiae

<400> 102

Met Leu Asp Ile Ile Leu Ser Gly Ile Ser Gln Gly Leu Leu Trp Ser  
1 5 10 15

Ile Met Ala Ile Gly Val Phe Ile Thr Phe Arg Ile Leu Asp Ile Ala  
20 25 30

Asp Leu Ser Ala Glu Gly Ala Phe Pro Met Gly Ala Ala Val Cys Ala  
35 40 45

Leu Cys Ile Val  
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<210> 103

<211> 161

<212> DNA

<213> Streptococcus agalactiae



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 cttagatata aagaaccaga gagtgaacat gacaagcgac ctacttttta tttggtagta 120  
 cttataacttg ttactgtagc agttatattg tcggtattta a 161

<210> 104  
 <211> 53  
 <212> PRT  
 <213> Streptococcus agalactiae

<400> 104  
 Met Glu Met Pro Lys Arg Asn Glu Leu Leu Asn Lys Glu Ile Lys Met  
 1 5 10 15  
 Ser Ile Asp Lys Leu Arg Tyr Lys Glu Pro Glu Ser Glu His Asp Lys  
 20 25 30  
 Arg Pro Thr Phe Tyr Leu Val Val Leu Ile Leu Val Thr Val Ala Val  
 35 40 45  
 Ile Leu Ser Leu Phe  
 50

<210> 105  
 <211> 179  
 <212> DNA  
 <213> Streptococcus agalactiae

<400> 105  
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 tacgcaacac ctcttatctt tacaagtatt gggggaacct tctctgaacg tgggtggtatc 120  
 gtcaacgttg gtttagaagg aattatggta attggagctt tctcaggcgt tgtatttaa 179

<210> 106  
 <211> 59  
 <212> PRT  
 <213> Streptococcus agalactiae

<400> 106  
 Met Val Ser Lys Leu Ser Leu Thr Thr Ile Phe Ala Leu Leu Phe Ser  
 1 5 10 15  
 Ser Met Leu Ile Tyr Ala Thr Pro Leu Ile Phe Thr Ser Ile Gly Gly  
 20 25 30  
 Thr Phe Ser Glu Arg Gly Gly Ile Val Asn Val Gly Leu Glu Gly Ile  
 35 40 45

Met Val Ile Gly Ala Phe Ser Gly Val Val Phe  
50 55

<210> 107  
<211> 558  
<212> DNA  
<213> Streptococcus agalactiae

<400> 107  
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cttgctatga tgttttttagc acctatttta attatgtttt tgatgaatgt tatgttttct 120  
gcgaatagta atacaaaagt taagattgga actattaacg ttaacacgaa ggtcgtttca 180  
aatttagata atattaagca tattcaagtg agatcattta aatttaactc atctgctaaa 240  
aaagcactca aatcaaataa aattgatgct cttatttcgg aggacaataa atcttatact 300  
gtctttctatg cgaatacaga ttcttcaaag acgactttaa caagacaagc ttttaaaacc 360  
gctgttaata caatgaacag taaggaactg atttcgcaag ttaaaatttt agctaataag 420  
aatccgaaac tagcacaatc cttacaaact cgctccaat atatcaaaga aaaatataat 480  
tacggaaata aaaatacagg cttttttgca aaaatgatac caatactaataat gggatttatg 540  
gtctttcttct tgggttttt 558

<210> 108  
<211> 186  
<212> PRT  
<213> Streptococcus agalactiae

<400> 108

Met Arg Ile Ile Ala Ile Thr Glu Lys Val Ile Lys Glu Leu Phe Arg  
1 5 10 15  
Asp Lys Arg Thr Leu Ala Met Met Phe Leu Ala Pro Ile Leu Ile Met  
20 25 30  
Phe Leu Met Asn Val Met Phe Ser Ala Asn Ser Asn Thr Lys Val Lys  
35 40 45  
Ile Gly Thr Ile Asn Val Asn Thr Lys Val Val Ser Asn Leu Asp Asn  
50 55 60  
Ile Lys His Ile Gln Val Arg Ser Phe Lys Phe Asn Ser Ser Ala Lys  
65 70 75 80  
Lys Ala Leu Lys Ser Asn Lys Ile Asp Ala Leu Ile Ser Glu Asp Asn  
85 90 95  
Lys Ser Tyr Thr Val Phe Tyr Ala Asn Thr Asp Ser Ser Lys Thr Thr  
100 105 110

Leu Thr Arg Gln Ala Phe Lys Thr Ala Val Asn Thr Met Asn Ser Lys  
 115 120 125

Glu Leu Ile Ser Gln Val Lys Ile Leu Ala Asn Lys Asn Pro Lys Leu  
 130 135 140

Ala Gln Ser Leu Gln Thr Arg Ser Lys Tyr Ile Lys Glu Lys Tyr Asn  
 145 150 155 160

Tyr Gly Asn Lys Asn Thr Gly Phe Phe Ala Lys Met Ile Pro Ile Leu  
 165 170 175

Met Gly Phe Met Val Phe Phe Leu Val Phe  
 180 185

<210> 109

<211> 100

<212> DNA

<213> Streptococcus agalactiae

<400> 109

gtgattatcg ttatgagtaa acatcaagaa attttgagtg acctagaaaa tttagctgtt 60

ggtaagaggg ttagtgtacg cagtatttca aatcatttaa 100

<210> 110

<211> 33

<212> PRT

<213> Streptococcus agalactiae

<400> 110

Met Ile Ile Val Met Ser Lys His Gln Glu Ile Leu Glu Tyr Leu Glu  
 1 5 10 15

Asn Leu Ala Val Gly Lys Arg Val Ser Val Arg Ser Ile Ser Asn His  
 20 25 30

Leu

<210> 111

<211> 326

<212> DNA

<213> Streptococcus agalactiae

<400> 111

atgtatagag aaattaccgc tgcgaacac gatcgctttg tgagcgaatc caaccaaaca 60

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ggcttttttg acggtgaaac ccaaattgcc agcgctagta ttctcatcaa atcacttcoct 180

cttggtttct ccatgctgta tattccgcgt ggaccaatca tggattactc caatctagat 240

attgtaacta aggtccttaa ggaccttaaa gcttttggca aaaaacaaag agctctcttt 300  
atcaagtgtg atcctctcat ctattt 326

<210> 112  
<211> 108  
<212> PRT  
<213> Streptococcus agalactiae

<400> 112

Met Tyr Arg Glu Ile Thr Ala Val Glu His Asp Arg Phe Val Ser Glu  
1 5 10 15  
Ser Asn Gln Thr Asn Leu Leu Gln Ser Leu Asn Trp Pro Lys Val Lys  
20 25 30  
Asp Asn Trp Gly Ser Gln Leu Leu Gly Phe Phe Asp Gly Glu Thr Gln  
35 40 45  
Ile Ala Ser Ala Ser Ile Leu Ile Lys Ser Leu Pro Leu Gly Phe Ser  
50 55 60  
Met Leu Tyr Ile Pro Arg Gly Pro Ile Met Asp Tyr Ser Asn Leu Asp  
65 70 75 80  
Ile Val Thr Lys Val Leu Lys Asp Leu Lys Ala Phe Gly Lys Lys Gln  
85 90 95  
Arg Ala Leu Phe Ile Lys Cys Asp Pro Leu Ile Tyr  
100 105

<210> 113  
<211> 215  
<212> DNA  
<213> Streptococcus agalactiae

<400> 113

atggacaaga aaaaaatctt agtaacgggt attgtgccta aagaaggtct aagaaagctt 60  
atggaccgat ttgatgttac ttattcagaa gatcgcccat tttcacgtga ctatgtgtta 120  
gagcatttat ctgaatatga cggatgggta ctcatgggac aaaaaggtga taaagagatg 180  
attgatgcag gtgaaaactt acaaattatt tctttt 215

<210> 114  
<211> 71  
<212> PRT  
<213> Streptococcus agalactiae

<400> 114

Met Asp Lys Lys Lys Ile Leu Val Thr Gly Ile Val Pro Lys Glu Gly  
1 5 10 15

Leu Arg Lys Leu Met Asp Arg Phe Asp Val Thr Tyr Ser Glu Asp Arg  
           20                                  25                                  30  
 Pro Phe Ser Arg Asp Tyr Val Leu Glu His Leu Ser Glu Tyr Asp Gly  
           35                                  40                                  45  
 Trp Leu Leu Met Gly Gln Lys Gly Asp Lys Glu Met Ile Asp Ala Gly  
           50                                  55                                  60  
 Glu Asn Leu Gln Ile Ile Ser  
           65                                  70

<210> 115  
 <211> 459  
 <212> DNA  
 <213> Streptococcus agalactiae

<400> 115  
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 gaagagagag ctacgagaat gctatctgat ttcttgcaag aagaaaaatg ggtaactgat 180  
 tttgctgaat ttatggcgat caaagaacat tttggtaata aggcgcttca agaatgggat 240  
 gacaaggcta ttatacgccg cgaagaagaa gccttagcag gatatcgtca aaagcttagt 300  
 gaagtgataa aatatcatga agtaacgcaa tttttctttt acaaacaatg gtttgagtta 360  
 aaagaatatg ctaatgataa agggattcaa attatcggtg atatgccaat ctacgtttct 420  
 gccgatagtg tagaagtttg gacaatgcct gaactgttt 459

<210> 116  
 <211> 153  
 <212> PRT  
 <213> Streptococcus agalactiae

<400> 116

Ile Ser Lys Asp Asp Tyr Gln Asn Ile Ser Phe Gly Gln Asp Pro Glu  
 1                  5                                  10                                  15  
 Val Val Asp Tyr Ala Gly Leu Phe Glu Lys Arg Arg Pro Val Leu Glu  
           20                                  25                                  30  
 Lys Ala Val Lys Asn Phe Leu Gln Glu Glu Arg Ala Thr Arg Met Leu  
           35                                  40                                  45  
 Ser Asp Phe Leu Gln Glu Glu Lys Trp Val Thr Asp Phe Ala Glu Phe  
           50                                  55                                  60  
 Met Ala Ile Lys Glu His Phe Gly Asn Lys Ala Leu Gln Glu Trp Asp  
 65                                  70                                  75                                  80

Asp Lys Ala Ile Ile Arg Arg Glu Glu Glu Ala Leu Ala Gly Tyr Arg  
85 90 95

Gln Lys Leu Ser Glu Val Ile Lys Tyr His Glu Val Thr Gln Tyr Phe  
100 105 110

Phe Tyr Lys Gln Trp Phe Glu Leu Lys Glu Tyr Ala Asn Asp Lys Gly  
115 120 125

Ile Gln Ile Ile Gly Asp Met Pro Ile Tyr Val Ser Ala Asp Ser Val  
130 135 140

Glu Val Trp Thr Met Pro Glu Leu Phe  
145 150

<210> 117

<211> 1143

<212> DNA

<213> Streptococcus agalactiae

<400> 117

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gttgogactc ttgctgcatg tggaagtaaa tcagcttccc aggattctaa tggagcgatt	120
aattgggcta ttccaacaga aatcaataca ctagatttat ctaaagttac agacacttac	180
tcaaactctag ctattggtaa ctctagtagt aatttccttc gcttagataa agatggaaag	240
acaagaccag acttggctac taaagttgat gtttcaaaag atggcttaac ttatacagct	300
acattacgta aaggcttgaa gtggtcagat ggcagtaaac ttactgcaaa ggattttggt	360
tattcatggc aacgtttagt tgatcctaaa acagcttcac aatatgctta ccttgctggt	420
gaagggcagtg tgcttaatgc cgataaaatc aacgaaggac aagagaaaga cttgaataag	480
ctaggtgtta aggcagaagg cgatgacaaa gttgttatta ctttatctag tccgtctccg	540
caattcatct actaccttgc attcactaac ttcatgccac aaaaacaaga agttgttgaa	600
aaatatggaa aagattacgc aactacttca aaaaatacag tttactcagg accatatact	660
gttgaagggtt ggaatgggtc gaatggtact ttcacgctga agaaaaacaa aaattattgg	720
gacgctaaaa atgtaaaaac aaaagaagtt cgcattccaga ctgttaaaaa accagatacc	780
gccgttcaaa tgtataaacg tggtaggtta gatgcagcta atatctcaaa tacttctgct	840
atttatcaag ctaataaaaa taataaagat gtcacagatg ttctagaagc gaccactgcc	900
tatatggaat ataatactac tggttctgtg aaagggttg ataatgttaa gattcgtcgc	960
gccttaaaact tagcaactaa ccgtaaagga gttgttcaag cagccgttga tacaggctca	1020
aaaccggcaa ttgcttttgc acctactggt ttagccaaaa caccagatgg aactgatttg	1080

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cta 1143

<210> 118  
<211> 381  
<212> PRT  
<213> Streptococcus agalactiae

<400> 118

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Thr	Leu	Ala	Ser	Val	Ala	Thr	Leu	Ala	Ala	Cys	Gly	Ser	Lys	Ser	Ala	20	25	30	
Ser	Gln	Asp	Ser	Asn	Gly	Ala	Ile	Asn	Trp	Ala	Ile	Pro	Thr	Glu	Ile	35	40	45	
Asn	Thr	Leu	Asp	Leu	Ser	Lys	Val	Thr	Asp	Thr	Tyr	Ser	Asn	Leu	Ala	50	55	60	
Ile	Gly	Asn	Ser	Ser	Ser	Asn	Phe	Leu	Arg	Leu	Asp	Lys	Asp	Gly	Lys	65	70	75	80
Thr	Arg	Pro	Asp	Leu	Ala	Thr	Lys	Val	Asp	Val	Ser	Lys	Asp	Gly	Leu	85	90	95	
Thr	Tyr	Thr	Ala	Thr	Leu	Arg	Lys	Gly	Leu	Lys	Trp	Ser	Asp	Gly	Ser	100	105	110	
Lys	Leu	Thr	Ala	Lys	Asp	Phe	Val	Tyr	Ser	Trp	Gln	Arg	Leu	Val	Asp	115	120	125	
Pro	Lys	Thr	Ala	Ser	Gln	Tyr	Ala	Tyr	Leu	Ala	Val	Glu	Gly	His	Val	130	135	140	
Leu	Asn	Ala	Asp	Lys	Ile	Asn	Glu	Gly	Gln	Glu	Lys	Asp	Leu	Asn	Lys	145	150	155	160
Leu	Gly	Val	Lys	Ala	Glu	Gly	Asp	Asp	Lys	Val	Val	Ile	Thr	Leu	Ser	165	170	175	
Ser	Pro	Ser	Pro	Gln	Phe	Ile	Tyr	Tyr	Leu	Ala	Phe	Thr	Asn	Phe	Met	180	185	190	
Pro	Gln	Lys	Gln	Glu	Val	Val	Glu	Lys	Tyr	Gly	Lys	Asp	Tyr	Ala	Thr	195	200	205	
Thr	Ser	Lys	Asn	Thr	Val	Tyr	Ser	Gly	Pro	Tyr	Thr	Val	Glu	Gly	Trp	210	215	220	
Asn	Gly	Ser	Asn	Gly	Thr	Phe	Thr	Leu	Lys	Lys	Asn	Lys	Asn	Tyr	Trp	225	230	235	240





35	40	45	
Ser Tyr Gln Val Gly Trp Thr Asn Leu Val Leu Lys Trp Glu Glu Asp			
50	55	60	
Glu Arg Lys Gly Leu Gln Val Lys Thr Pro Ser Asp Lys Phe			
65	70	75	
<210> 121			
<211> 150			
<212> DNA			
<213> Streptococcus agalactiae			
<400> 121			
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gggattattg cactcaaaga tggcatgcta gcaattttac cactaacagt tgttgggagt		120	
ctcttttttaa tattagggca gcttccattt		150	
<210> 122			
<211> 50			
<212> PRT			
<213> Streptococcus agalactiae			
<400> 122			
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Val Asn Met Arg Gly Ile Ile Ala Leu Lys Asp Gly Met Leu Ala Ile			
	20	25	30
Leu Pro Leu Thr Val Val Gly Ser Leu Phe Leu Ile Leu Gly Gln Leu			
	35	40	45
Pro Phe			
50			
<210> 123			
<211> 535			
<212> DNA			
<213> Streptococcus agalactiae			
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ttagaaagaa ttcacaatga agacattgat gtttgttctg gattcatttg tggatatggga		180	
gagagc gatg aggggctcat cacattagct ttcagactaa aagaactgaa cccctattct		240	
atccctgtca attttttact tgctgttgaa ggaacacctc ttggaaaata taactatttg		300	
actcccatta aatgcttaaa aattatggcc atgttgcggt ttgtttttcc tttcaaggaa		360	

ttaagattaa gtgctggacg ggaggtccat ttgagaatt ttgaatcatt agtcacctta 420  
 cttgttgact caactttttt gggaaattac ctaacagagg ggggtcgcaa tcaacatacc 480  
 gatattgaat tcttggaaaa attacaacta aatcatacta aaaaggaatt aattt 535

<210> 124  
 <211> 178  
 <212> PRT  
 <213> Streptococcus agalactiae

<400> 124

Glu Thr Thr Ser Ser Val Lys Pro Ala Gly Ile Asp Arg Ile Asn His  
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 20 25 30  
 Ser Phe Lys Asp Arg Cys Asp Thr Leu Glu Arg Ile His Asn Glu Asp  
 35 40 45  
 Ile Asp Val Cys Ser Gly Phe Ile Cys Gly Met Gly Glu Ser Asp Glu  
 50 55 60  
 Gly Leu Ile Thr Leu Ala Phe Arg Leu Lys Glu Leu Asn Pro Tyr Ser  
 65 70 75 80  
 Ile Pro Val Asn Phe Leu Leu Ala Val Glu Gly Thr Pro Leu Gly Lys  
 85 90 95  
 Tyr Asn Tyr Leu Thr Pro Ile Lys Cys Leu Lys Ile Met Ala Met Leu  
 100 105 110  
 Arg Phe Val Phe Pro Phe Lys Glu Leu Arg Leu Ser Ala Gly Arg Glu  
 115 120 125  
 Val His Phe Glu Asn Phe Glu Ser Leu Val Thr Leu Leu Val Asp Ser  
 130 135 140  
 Thr Phe Leu Gly Asn Tyr Leu Thr Glu Gly Gly Arg Asn Gln His Thr  
 145 150 155 160  
 Asp Ile Glu Phe Leu Glu Lys Leu Gln Leu Asn His Thr Lys Lys Glu  
 165 170 175  
 Leu Ile

<210> 125  
 <211> 563  
 <212> DNA  
 <213> Streptococcus agalactiae

<400> 125

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 cctgatggag aggaaatctc gcggcatatt tttgatgcta gtagtgatat tccttttgtt 180  
 gatccacaag tctggcataa agtttcgccg aatagtcag acttaagttg ctatctaact 240  
 ttttactgcc aaaaagaaga ttacttccat aaaaaatatg gtctcacgcg cacacattct 300  
 gaggttatcg ccagtgcacc tctcttatct gagaagagta atatattaga ccttgggtgt 360  
 ggtcaagggc gaaactcact ttatttatcg ctgctgggac atcaagtgac ttctgtcgat 420  
 tcaaacggac agagccttgt agctttagaa aatatggcat tagaagaaga gcttccttac 480  
 aatataaaaa ggtatgatat taatactact gctattgaag ggcactatga ttttatttta 540  
 tcaactgtgg tatttatgtt ttt 563

<210> 126  
 <211> 187  
 <212> PRT  
 <213> Streptococcus agalactiae

<400> 126

Met	Pro	Val	Trp	Thr	Ala	Gln	Ser	Ile	Pro	Lys	Ala	Phe	Leu	Glu	Lys
1				5					10					15	
His	Asn	Thr	Lys	Glu	Gly	Thr	Trp	Ala	Lys	Leu	Thr	Ile	Leu	Ser	Gly
			20					25					30		
Ser	Leu	Val	Phe	Tyr	Gln	Leu	Ser	Pro	Asp	Gly	Glu	Glu	Ile	Ser	Arg
		35					40					45			
His	Ile	Phe	Asp	Ala	Ser	Ser	Asp	Ile	Pro	Phe	Val	Asp	Pro	Gln	Val
	50					55					60				
Trp	His	Lys	Val	Ser	Pro	Asn	Ser	Pro	Asp	Leu	Ser	Cys	Tyr	Leu	Thr
65					70					75				80	
Phe	Tyr	Cys	Gln	Lys	Glu	Asp	Tyr	Phe	His	Lys	Lys	Tyr	Gly	Leu	Thr
			85						90					95	
Arg	Thr	His	Ser	Glu	Val	Ile	Ala	Ser	Ala	Pro	Leu	Leu	Ser	Glu	Lys
			100					105					110		
Ser	Asn	Ile	Leu	Asp	Leu	Gly	Cys	Gly	Gln	Gly	Arg	Asn	Ser	Leu	Tyr
	115						120					125			
Leu	Ser	Leu	Leu	Gly	His	Gln	Val	Thr	Ser	Val	Asp	Ser	Asn	Gly	Gln
	130					135					140				
Ser	Leu	Val	Ala	Leu	Glu	Asn	Met	Ala	Leu	Glu	Glu	Glu	Leu	Pro	Tyr
145					150					155					160

Asn Ile Lys Arg Tyr Asp Ile Asn Thr Thr Ala Ile Glu Gly His Tyr  
165 170 175

Asp Phe Ile Leu Ser Thr Val Val Phe Met Phe  
180 185

<210> 127  
<211> 417  
<212> DNA  
<213> Streptococcus agalactiae

<400> 127  
atgacaaagc aaataattgc catttgggct gaagatgaag accatttgat tggagttaat 60  
ggcggtttac catggaggct tcctaaagag ttacatcact tcaaagaaac gaccatgggg 120  
caggctttgc ttatgggacg aaagaccttt gatggaatga accgtcgtgt ttacctggt 180  
agagagacaa tcatcttaac aaaagatgaa caattccaag cagatggagt gacagtccta 240  
aatagtgttg aacaagttat aaaatggttt caggaacata ataagacctt atttattgta 300  
ggtggtgcaa gtatttataa agcatttctg ccttattgtg aagcaatcat aaaaactaaa 360  
gttcatggaa aattcaaagg tgatacctat tttcctgatg ttaatctatc tgagttt 417

<210> 128  
<211> 139  
<212> PRT  
<213> Streptococcus agalactiae

<400> 128

Met Thr Lys Gln Ile Ile Ala Ile Trp Ala Glu Asp Glu Asp His Leu  
1 5 10 15  
Ile Gly Val Asn Gly Gly Leu Pro Trp Arg Leu Pro Lys Glu Leu His  
20 25 30  
His Phe Lys Glu Thr Thr Met Gly Gln Ala Leu Leu Met Gly Arg Lys  
35 40 45  
Thr Phe Asp Gly Met Asn Arg Arg Val Leu Pro Gly Arg Glu Thr Ile  
50 55 60  
Ile Leu Thr Lys Asp Glu Gln Phe Gln Ala Asp Gly Val Thr Val Leu  
65 70 75 80  
Asn Ser Val Glu Gln Val Ile Lys Trp Phe Gln Glu His Asn Lys Thr  
85 90 95  
Leu Phe Ile Val Gly Gly Ala Ser Ile Tyr Lys Ala Phe Leu Pro Tyr  
100 105 110  
Cys Glu Ala Ile Ile Lys Thr Lys Val His Gly Lys Phe Lys Gly Asp

115 120 125

Thr Tyr Phe Pro Asp Val Asn Leu Ser Glu Phe  
130 135

<210> 129  
<211> 543  
<212> DNA  
<213> Streptococcus agalactiae

<400> 129  
ttgtggccaa actgtgcccc gcttattaat agcactttgt tcaccattga agatatctta 60  
acatcaggtg ctcatagcaa ccctatctta atgggggtta tacttggcgg gacaattgta 120  
gtagtggcga cagcaccact ttcttctatg gcattgacag ctatgctagg attaaccgga 180  
atgcctatgg ctataggagc cttgtctgtc tttgggtcgt ctttatgaa tgggtgtactt 240  
ttccataaat taaaacttgg aagtcgtaaa gataatatag cttttgctgt tgagcctcta 300  
actcaagctg acgtgacttc agctaaccct attccaatct atgtcactaa ttttgttggt 360  
gggtgcagctt gtggtatctt aattgccttg atgaaattag ttaatgatac tcctggaaca 420  
gcgacaccaa ttgcaggatt tgctgtcatg tttgcctata acccaatgat aaaagtacta 480  
ataaccgctc taggttgtat tatcctatct ttactagcag gctatcttgg aggcattggt 540  
ttt 543

<210> 130  
<211> 181  
<212> PRT  
<213> Streptococcus agalactiae

<400> 130

Met Trp Pro Asn Cys Ala Pro Leu Ile Asn Ser Thr Leu Phe Thr Ile  
1 5 10 15  
Glu Asp Ile Leu Thr Ser Gly Ala His Ser Asn Pro Ile Leu Met Gly  
20 25 30  
Val Ile Leu Gly Gly Thr Ile Val Val Val Ala Thr Ala Pro Leu Ser  
35 40 45  
Ser Met Ala Leu Thr Ala Met Leu Gly Leu Thr Gly Met Pro Met Ala  
50 55 60  
Ile Gly Ala Leu Ser Val Phe Gly Ser Ser Phe Met Asn Gly Val Leu  
65 70 75 80  
Phe His Lys Leu Lys Leu Gly Ser Arg Lys Asp Asn Ile Ala Phe Ala  
85 90 95

Val Glu Pro Leu Thr Gln Ala Asp Val Thr Ser Ala Asn Pro Ile Pro  
100 105 110

Ile Tyr Val Thr Asn Phe Val Gly Gly Ala Ala Cys Gly Ile Leu Ile  
115 120 125

Ala Leu Met Lys Leu Val Asn Asp Thr Pro Gly Thr Ala Thr Pro Ile  
130 135 140

Ala Gly Phe Ala Val Met Phe Ala Tyr Asn Pro Met Ile Lys Val Leu  
145 150 155 160

Ile Thr Ala Leu Gly Cys Ile Ile Leu Ser Leu Leu Ala Gly Tyr Phe  
165 170 175

Gly Gly Ile Val Phe  
180

<210> 131  
<211> 172  
<212> DNA  
<213> Streptococcus agalactiae

<400> 131  
atgttttttaa gtataatggc aggtgtcata gcatttgtcc tgacagttat tgccattcca 60  
cgcttcatta agttttacca attgaagaaa attggcgggc aacaaatgca tgaagatgtc 120  
aaacaacatc tagccaaagc aggtacgccg acaatgggag gaacggtatt tt 172

<210> 132  
<211> 57  
<212> PRT  
<213> Streptococcus agalactiae

<400> 132

Met Phe Leu Ser Ile Met Ala Gly Val Ile Ala Phe Val Leu Thr Val  
1 5 10 15

Ile Ala Ile Pro Arg Phe Ile Lys Phe Tyr Gln Leu Lys Lys Ile Gly  
20 25 30

Gly Gln Gln Met His Glu Asp Val Lys Gln His Leu Ala Lys Ala Gly  
35 40 45

Thr Pro Thr Met Gly Gly Thr Val Phe  
50 55

<210> 133  
<211> 113  
<212> DNA  
<213> Streptococcus agalactiae

<400> 133  
atgaaaccat atttatcttt tattggtaga acgttattat acttcggtat tttattgtta 60

ctaatttact tttttgcata ccttggtcgc ggacaaggca gttttattta taa 113

<210> 134  
<211> 37  
<212> PRT  
<213> Streptococcus agalactiae

<400> 134

Met Lys Pro Tyr Leu Ser Phe Ile Gly Arg Thr Leu Leu Tyr Phe Gly  
1 5 10 15  
Ile Leu Leu Leu Leu Ile Tyr Phe Phe Ala Tyr Leu Gly Arg Gly Gln  
20 25 30  
Gly Ser Phe Ile Tyr  
35

<210> 135  
<211> 651  
<212> DNA  
<213> Streptococcus agalactiae

<400> 135  
atgtcatatt ttagaaatta ctggtatcgt tttggagcaa ttttatttat tatttttagca 60  
gtaatattgc ttgttttttag acctgactgg tcaatgcttc actatctatt gtattttttac 120  
tttatggcac ttctagcgca tcaatttgaa gaatatcagt ttcccgggtgg ggcatcacct 180  
atcattaact atgttggtta tgatgaagaa gagctgatgg attgttttcc aggcaatact 240  
cagtctatta tgttgggttaa tactattgct tggttgcttt acattgctag tattgctttt 300  
cctcaagctt attggcttgg attaggagtc atgttcttta gtctaacgca gctcttgggt 360  
catgggttttc agatgaatat taaacttaaa acttggtata atcctggtct agcaacgaca 420  
gtattttctcc tagtaccaat agcttgcgca tacatctatc aagctagtgc agaaggaatg 480  
ctcacttggg gagattggct aggtgggttt atcatgttga ttgtctgtgt actaactagc 540  
attattgcac ctgtacagct attgaaggat aaggagacca attatattat tagtccttgg 600  
caaatggacc gttttcataa ggtcgttaat tttgtaagga taaaaaata a 651

<210> 136  
<211> 216  
<212> PRT  
<213> Streptococcus agalactiae

<400> 136

Met Ser Tyr Phe Arg Asn Tyr Trp Tyr Arg Phe Gly Ala Ile Leu Phe

1	5	10	15
Ile Ile Leu Ala Val Ile Leu Leu Val Phe Arg Pro Asp Trp Ser Met	20	25	30
Leu His Tyr Leu Leu Tyr Phe Tyr Phe Met Ala Leu Leu Ala His Gln	35	40	45
Phe Glu Glu Tyr Gln Phe Pro Gly Gly Ala Ser Pro Ile Ile Asn Tyr	50	55	60
Val Val Tyr Asp Glu Glu Glu Leu Met Asp Cys Phe Pro Gly Asn Thr	65	70	80
Gln Ser Ile Met Leu Val Asn Thr Ile Ala Trp Leu Leu Tyr Ile Ala	85	90	95
Ser Ile Ala Phe Pro Gln Ala Tyr Trp Leu Gly Leu Gly Val Met Phe	100	105	110
Phe Ser Leu Thr Gln Leu Leu Gly His Gly Phe Gln Met Asn Ile Lys	115	120	125
Leu Lys Thr Trp Tyr Asn Pro Gly Leu Ala Thr Thr Val Phe Leu Leu	130	135	140
Val Pro Ile Ala Cys Ala Tyr Ile Tyr Gln Ala Ser Ala Glu Gly Met	145	150	155
Leu Thr Trp Gly Asp Trp Leu Gly Gly Phe Ile Met Leu Ile Val Cys	165	170	175
Val Leu Thr Ser Ile Ile Ala Pro Val Gln Leu Leu Lys Asp Lys Glu	180	185	190
Thr Asn Tyr Ile Ile Ser Pro Trp Gln Met Asp Arg Phe His Lys Val	195	200	205
Val Asn Phe Val Arg Ile Lys Lys	210	215	

<210> 137

<211> 75

<212> DNA

<213> Streptococcus agalactiae

<400> 137

atgccactta cagcacttga aattaaagat aaaacatttt catcaaaatt tcgcggttat 60

agcgaagaag aagtt 75

<210> 138

<211> 25

<212> PRT

<213> Streptococcus agalactiae



<400> 138

Met Pro Leu Thr Ala Leu Glu Ile Lys Asp Lys Thr Phe Ser Ser Lys  
1 5 10 15

Phe Arg Gly Tyr Ser Glu Glu Glu Val  
20 25

<210> 139

<211> 377

<212> DNA

<213> Streptococcus agalactiae

<400> 139

atgtcacttt ttcaagaaaa aattgcttac aattgcgcta aaaaggaagc gctttataaa 60  
gagagtttag gacgctacgc cttgagatca atgctagcag gggcttattt gacaatgagt 120  
actgctgccg gtatcgtcgc agctgatact attggtaaaa tttctcctgc tctatcaggt 180  
tttgtatttg ctttcatctt tagttttgga cttatttatg ttttaatat taatggtgaa 240  
ttggcgacat ctaatatgct ttatctcact gcaggagcct ataataaaaa tatctcttgg 300  
aaaaaagcca taacaatttt aatttattgt acttttttca acctcgttgg tgcttgata 360  
ttagcttggg tgtttaa 377

<210> 140

<211> 125

<212> PRT

<213> Streptococcus agalactiae

<400> 140

Met Ser Leu Phe Gln Glu Lys Ile Ala Tyr Asn Cys Ala Lys Lys Glu  
1 5 10 15

Ala Leu Tyr Lys Glu Ser Leu Gly Arg Tyr Ala Leu Arg Ser Met Leu  
20 25 30

Ala Gly Ala Tyr Leu Thr Met Ser Thr Ala Ala Gly Ile Val Ala Ala  
35 40 45

Asp Thr Ile Gly Lys Ile Ser Pro Ala Leu Ser Gly Phe Val Phe Ala  
50 55 60

Phe Ile Phe Ser Phe Gly Leu Ile Tyr Val Leu Ile Phe Asn Gly Glu  
65 70 75 80

Leu Ala Thr Ser Asn Met Leu Tyr Leu Thr Ala Gly Ala Tyr Asn Lys  
85 90 95

Asn Ile Ser Trp Lys Lys Ala Ile Thr Ile Leu Ile Tyr Cys Thr Phe  
100 105 110

Phe Asn Leu Val Gly Ala Cys Ile Leu Ala Trp Leu Phe  
115 120 125

<210> 141  
<211> 419  
<212> DNA  
<213> Streptococcus agalactiae

<400> 141  
aagttacaag cgactgaagt taagagcggt ccggtagcac aaccagcttc aacaacaaat 60  
gcagtagctg cacatcctga aaatgcaggg ctccaacctc atgttgcagc ttataaagaa 120  
aaagtagcgt caacttatgg agttaatgaa ttcagtacat accgtgcggg agatccaggt 180  
gatcatggta aaggtttagc agttgacttt attgtaggta aaaaccaagc acttggtaat 240  
gaagttgcac agtactctac acaaaatatg gcagcaaata acatttcata tgttatctgg 300  
caacaaaagt ttatttcaaa tacaaatagt atttatggac ctgctaatac ttggaatgca 360  
atgccagatc gtggtggcgt tactgccaac cactatgacc acgttcacgt atcatttaa 419

<210> 142  
<211> 139  
<212> PRT  
<213> Streptococcus agalactiae

<400> 142

Lys Leu Gln Ala Thr Glu Val Lys Ser Val Pro Val Ala Gln Pro Ala  
1 5 10 15  
Ser Thr Thr Asn Ala Val Ala Ala His Pro Glu Asn Ala Gly Leu Gln  
20 25 30  
Pro His Val Ala Ala Tyr Lys Glu Lys Val Ala Ser Thr Tyr Gly Val  
35 40 45  
Asn Glu Phe Ser Thr Tyr Arg Ala Gly Asp Pro Gly Asp His Gly Lys  
50 55 60  
Gly Leu Ala Val Asp Phe Ile Val Gly Lys Asn Gln Ala Leu Gly Asn  
65 70 75 80  
Glu Val Ala Gln Tyr Ser Thr Gln Asn Met Ala Ala Asn Asn Ile Ser  
85 90 95  
Tyr Val Ile Trp Gln Gln Lys Phe Tyr Ser Asn Thr Asn Ser Ile Tyr  
100 105 110  
Gly Pro Ala Asn Thr Trp Asn Ala Met Pro Asp Arg Gly Gly Val Thr  
115 120 125  
Ala Asn His Tyr Asp His Val His Val Ser Phe  
130 135

<210> 143  
 <211> 693  
 <212> DNA  
 <213> Streptococcus agalactiae

<400> 143  
 atgattccag tagttattga acaaacaagt cgtggtgaac gttcttatga tatttactca 60  
 cgtcttttaa aagatcgtat tattatgttg acaggccaag ttgaggataa tatggccaat 120  
 agtatcattg cacagttatt gtttctcgat gcacaagata atacaaagga tatttacctt 180  
 tatgtcaata caccaggtgg ttcagtatcg gctggacttg ctattgtgga caccatgaac 240  
 ttcattaaat cggacgtaca gacgattggt atggggatgg ctgcttcgat gggaaccatt 300  
 attgcttcaa gtggtgctaa aggaaaacgt tttatgttac cgaatgcaga atatatgatc 360  
 caccaaccaa tgggcggaac aggcggaggt acacagcaat ctgatatggc tatcgctgct 420  
 gagcatcttt taaaaacgcg tcatacttta gaaaaaatct tagctgataa ttctggtcaa 480  
 tctattgaaa aagtccatga tgatgcagag cgtgatcggt ggatgagtgc tcaagaacac 540  
 ttgattatgg ctttattgat gctattatgg aaaataataa tttacaataa tagatttaaa 600  
 agagttgagt ttaccaactc tttttttatt tgttgaatt atgttataat cttagtaatt 660  
 acagatatga cgcagaaagg aaaaaattat tga 693

<210> 144  
 <211> 230  
 <212> PRT  
 <213> Streptococcus agalactiae

<400> 144  
 Met Ile Pro Val Val Ile Glu Gln Thr Ser Arg Gly Glu Arg Ser Tyr  
 1 5 10 15  
 Asp Ile Tyr Ser Arg Leu Leu Lys Asp Arg Ile Ile Met Leu Thr Gly  
 20 25 30  
 Gln Val Glu Asp Asn Met Ala Asn Ser Ile Ile Ala Gln Leu Leu Phe  
 35 40 45  
 Leu Asp Ala Gln Asp Asn Thr Lys Asp Ile Tyr Leu Tyr Val Asn Thr  
 50 55 60  
 Pro Gly Gly Ser Val Ser Ala Gly Leu Ala Ile Val Asp Thr Met Asn  
 65 70 75 80  
 Phe Ile Lys Ser Asp Val Gln Thr Ile Val Met Gly Met Ala Ala Ser  
 85 90 95

Met Gly Thr Ile Ile Ala Ser Ser Gly Ala Lys Gly Lys Arg Phe Met  
 100 105 110

Leu Pro Asn Ala Glu Tyr Met Ile His Gln Pro Met Gly Gly Thr Gly  
 115 120 125

Gly Gly Thr Gln Gln Ser Asp Met Ala Ile Ala Ala Glu His Leu Leu  
 130 135 140

Lys Thr Arg His Thr Leu Glu Lys Ile Leu Ala Asp Asn Ser Gly Gln  
 145 150 155 160

Ser Ile Glu Lys Val His Asp Asp Ala Glu Arg Asp Arg Trp Met Ser  
 165 170 175

Ala Gln Glu His Leu Ile Met Ala Leu Leu Met Leu Leu Trp Lys Ile  
 180 185 190

Ile Ile Tyr Asn Asn Arg Phe Lys Arg Val Glu Phe Thr Asn Ser Phe  
 195 200 205

Phe Ile Cys Trp Asn Tyr Val Ile Ile Leu Val Ile Thr Asp Met Thr  
 210 215 220

Gln Lys Gly Lys Asn Tyr  
 225 230

<210> 145  
 <211> 459  
 <212> DNA  
 <213> Streptococcus agalactiae

<400> 145  
 atgaaaccaa aaattattgg tgtacttggt ctaggaatat ttggacaaac actcgacaaa 60  
 gaactaagta actttgaaca agatgttatt gctattgaca gcaatcctga aaatgtacaa 120  
 gctgtcgccg aagttgttac aaaagcagct atcggagaca ttactgattt agctttccta 180  
 aaacacatcg ggatcagtga ctgtgatact gttattattg ctacaggaaa cagtttagag 240  
 agctcagtat tggccgtaat gcactgtaaa aagttaggcg tcccacaagt tattgctaaa 300  
 gctcgaaaacc ttgtatacga agaagtactt tatgaaattg gtgctgattt ggttatctct 360  
 ccggagcgag aatctgggca aaatgttgct gcaaacctca tgagaaataa aattacagat 420  
 gtcttccaga ttgaatctga tatttctgtc attgaattt 459

<210> 146  
 <211> 153  
 <212> PRT  
 <213> Streptococcus agalactiae

<400> 146

Met Lys Pro Lys Ile Ile Gly Val Leu Gly Leu Gly Ile Phe Gly Gln  
 1 5 10 15  
 Thr Leu Ala Gln Glu Leu Ser Asn Phe Glu Gln Asp Val Ile Ala Ile  
 20 25 30  
 Asp Ser Asn Pro Glu Asn Val Gln Ala Val Ala Glu Val Val Thr Lys  
 35 40 45  
 Ala Ala Ile Gly Asp Ile Thr Asp Leu Ala Phe Leu Lys His Ile Gly  
 50 55 60  
 Ile Ser Asp Cys Asp Thr Val Ile Ile Ala Thr Gly Asn Ser Leu Glu  
 65 70 75 80  
 Ser Ser Val Leu Ala Val Met His Cys Lys Lys Leu Gly Val Pro Gln  
 85 90 95  
 Val Ile Ala Lys Ala Arg Asn Leu Val Tyr Glu Glu Val Leu Tyr Glu  
 100 105 110  
 Ile Gly Ala Asp Leu Val Ile Ser Pro Glu Arg Glu Ser Gly Gln Asn  
 115 120 125  
 Val Ala Ala Asn Leu Met Arg Asn Lys Ile Thr Asp Val Phe Gln Ile  
 130 135 140  
 Glu Ser Asp Ile Ser Val Ile Glu Phe  
 145 150

<210> 147

<211> 330

<212> DNA

<213> Streptococcus agalactiae

<400> 147

gtgcgttata gtaaagagat tattcagtta gctataccag ctatgattga aaatatctta 60

caaatgctca tgggagtagt tgataattat ctagtggctc agttaggtgt tgtagcagta 120

tcaggtgttt cagttgctaa taatataatt actatattatc aagctatttt tatagcttta 180

ggggcgagta tagcaagtct attggccaag tcgtagcag gtagtgagaa ggatgatgca 240

atttcagtat gttctcaagc catttttcta acatcactga taggggcagt attaggaatt 300

atctcgattg tttttggaca aactttcttt 330

<210> 148

<211> 110

<212> PRT

<213> Streptococcus agalactiae

<400> 148

Met Arg Tyr Ser Lys Glu Ile Ile Gln Leu Ala Ile Pro Ala Met Ile

1	5	10	15
Glu Asn Ile	Leu Gln Met	Leu Met Gly Val Val	Asp Asn Tyr Leu Val
20		25	30
Ala Gln Leu	Gly Val Val	Ala Val Ser Gly Val	Ser Val Ala Asn Asn
35		40	45
Ile Ile Thr	Ile Tyr Gln	Ala Ile Phe Ile	Ala Leu Gly Ala Ser Ile
50		55	60
Ala Ser Leu	Leu Ala Lys	Ser Leu Ala Gly Ser	Glu Lys Asp Asp Ala
65	70		75 80
Ile Ser Val	Cys Ser Gln	Ala Ile Phe Leu Thr	Ser Leu Ile Gly Ala
	85	90	95
Val Leu Gly	Ile Ile Ser	Ile Val Phe Gly	Gln Thr Phe Phe
100		105	110

<210> 149  
 <211> 240  
 <212> DNA  
 <213> Streptococcus agalactiae

<400> 149	
ttgattaaca agtattcgtg ctttttgaag aggattctcc ataataatac tcctttaata	60
gttatcgtga gaagtatttt aaagaaaaac cgccaaggta gagcgacatt tctgccttta	120
actacaataa aaccaagaga attagcacia cattatctct caaaattaca aagttctcaa	180
gggttttttag gaatagctag tgaattggta acctatgatc aacgcttgtc aaacattttt	240

<210> 150  
 <211> 80  
 <212> PRT  
 <213> Streptococcus agalactiae

<400> 150

Met Ile Asn	Lys Tyr Ser	Cys Phe Leu	Lys Arg Ile	Leu His Asn Asn
1	5	10	15	
Thr Pro Leu	Ile Val Ile	Val Arg Ser	Ile Leu Lys	Lys Asn Arg Gln
20		25	30	
Gly Arg Ala	Thr Phe Leu	Pro Leu Thr	Thr Ile Lys	Pro Arg Glu Leu
35		40	45	
Ala Gln His	Tyr Leu Ser	Lys Leu Gln	Ser Ser Gln	Gly Phe Leu Gly
50		55	60	
Ile Ala Ser	Glu Leu Val	Thr Tyr Asp	Gln Arg Leu	Ser Asn Ile Phe
65	70	75	80	

<210> 151  
 <211> 649  
 <212> DNA  
 <213> Streptococcus agalactiae

<400> 151  
 ttgttgactc acaaaaatat attattaacc attatatattg gattatttat gattatatta 60  
 tcagcatgtg gtatgtctaa taaggaaatg gctgggtattg ataattggga acattatcaa 120  
 aaggaaaaga aaattactat tggatttgat aatacttttg ttcctatggg atttgaaagt 180  
 cgttctggtg actataccgg ctttgatatt gatttagcta atgctgtttt taaagaatac 240  
 ggtatttcag tgaaatggca gcctattaac tgggatatga aagaaactga acttaataat 300  
 ggtaatatag accttatttg gaatgggtat tcaaaaacgg cagaacgtgc taaaaaagtc 360  
 gctttttacaa acccatatat gaataatcat caagtaattg ttactaaaac ttcatcacat 420  
 attaatagta ttaaggatat gaaggggaaa aaactaggag ccagtcggg ttcattctggt 480  
 tttgatgctt ttaacgctaa acctgatatt ttaaaaaagt ttgtaaaagg aaaagaagca 540  
 gttcaatacg atactttcac tcaggctttg attgatttaa aaaataaccg tattgatggt 600  
 cttttgattg atgaagttaa tgctaactat tattttaagc aagaaggaa 649

<210> 152  
 <211> 216  
 <212> PRT  
 <213> Streptococcus agalactiae

<400> 152  
 Met Leu Thr His Lys Asn Ile Leu Leu Thr Ile Ile Phe Gly Leu Phe  
 1 5 10 15  
 Met Ile Ile Leu Ser Ala Cys Gly Met Ser Asn Lys Glu Met Ala Gly  
 20 25 30  
 Ile Asp Asn Trp Glu His Tyr Gln Lys Glu Lys Lys Ile Thr Ile Gly  
 35 40 45  
 Phe Asp Asn Thr Phe Val Pro Met Gly Phe Glu Ser Arg Ser Gly Asp  
 50 55 60  
 Tyr Thr Gly Phe Asp Ile Asp Leu Ala Asn Ala Val Phe Lys Glu Tyr  
 65 70 75 80  
 Gly Ile Ser Val Lys Trp Gln Pro Ile Asn Trp Asp Met Lys Glu Thr  
 85 90 95  
 Glu Leu Asn Asn Gly Asn Ile Asp Leu Ile Trp Asn Gly Tyr Ser Lys  
 100 105 110

Thr Ala Glu Arg Ala Lys Lys Val Ala Phe Thr Asn Pro Tyr Met Asn  
115 120 125

Asn His Gln Val Ile Val Thr Lys Thr Ser Ser His Ile Asn Ser Ile  
130 135 140

Lys Asp Met Lys Gly Lys Lys Leu Gly Ala Gln Ser Gly Ser Ser Gly  
145 150 155 160

Phe Asp Ala Phe Asn Ala Lys Pro Asp Ile Leu Lys Lys Phe Val Lys  
165 170 175

Gly Lys Glu Ala Val Gln Tyr Asp Thr Phe Thr Gln Ala Leu Ile Asp  
180 185 190

Leu Lys Asn Asn Arg Ile Asp Gly Leu Leu Ile Asp Glu Val Tyr Ala  
195 200 205

Asn Tyr Tyr Leu Lys Gln Glu Gly  
210 215

<210> 153

<211> 123

<212> DNA

<213> Streptococcus agalactiae

<400> 153

atgaaaattt ggaaaaaat aaccttaatg ttttctgcaa ttattttaac aacagtaatt 60

gcattgggag tctatgttgc ctcagcttat aatttttcga ctaatgaatt gtctaagact 120

ttt 123

<210> 154

<211> 41

<212> PRT

<213> Streptococcus agalactiae

<400> 154

Met Lys Ile Trp Lys Lys Ile Thr Leu Met Phe Ser Ala Ile Ile Leu  
1 5 10 15

Thr Thr Val Ile Ala Leu Gly Val Tyr Val Ala Ser Ala Tyr Asn Phe  
20 25 30

Ser Thr Asn Glu Leu Ser Lys Thr Phe  
35 40

<210> 155

<211> 687

<212> DNA

<213> Streptococcus agalactiae

<400> 155

atgaaaaaac aaagactatt actgcttttt ggaggcttat taataatgat aatgatgaca 60



gcatgtaagg attcaaaaat cccagaaaac cgcacgaaaa aggaatacca ggcagaacag 120  
 aattttaagt catactttta atatatatca gataaaaata actattttaga taatataaaa 180  
 gtttattact tttctataag tattttctaaa gatgtacaag ataaagtcag tgaaacaaca 240  
 acttgttcat atagactaga aaagcaaaaag aatcaagagt tcattggtaa ttttgaacat 300  
 gaagttagtg aatctagtca atattcaacc gaagttaaaa atcaaataca gtatccaatc 360  
 cagtataaag ataattcaat tcgttttact gaaaaaacac cgtcagaacg ttatgatgag 420  
 tttgttttta gttcatttga ttcttcatta ttaaaaaaat ataaaatata tgattactta 480  
 ctaaaacatc ccgaaactga attaaaaggt gtttcctata agattcctat aaattctgaa 540  
 attgtagccc cttttataaaa tcaattaaat ataaaaaatc ctaaaaaatc atctatttcg 600  
 gttacaaaaa cggaaagtaa agaataattat tatacaatca gtattgatac tgattctgag 660  
 atatattcta tattcgaagg tattcat 687

<210> 156  
 <211> 229  
 <212> PRT  
 <213> Streptococcus agalactiae

<400> 156

Met	Lys	Lys	Gln	Arg	Leu	Leu	Leu	Leu	Phe	Gly	Gly	Leu	Leu	Ile	Met
1				5					10					15	
Ile	Met	Met	Thr	Ala	Cys	Lys	Asp	Ser	Lys	Ile	Pro	Glu	Asn	Arg	Thr
			20					25						30	
Lys	Lys	Glu	Tyr	Gln	Ala	Glu	Gln	Asn	Phe	Lys	Ser	Tyr	Phe	Lys	Tyr
		35					40					45			
Ile	Ser	Asp	Lys	Asn	Asn	Tyr	Leu	Asp	Asn	Ile	Lys	Val	Tyr	Tyr	Phe
	50					55					60				
Ser	Ile	Ser	Ile	Ser	Lys	Asp	Val	Gln	Asp	Lys	Val	Ser	Glu	Thr	Thr
65					70					75				80	
Thr	Cys	Ser	Tyr	Arg	Leu	Glu	Lys	Gln	Lys	Asn	Gln	Glu	Phe	Ile	Gly
				85					90					95	
Asn	Phe	Glu	His	Glu	Val	Ser	Glu	Ser	Ser	Gln	Tyr	Ser	Thr	Glu	Val
			100					105					110		
Lys	Asn	Gln	Ile	Gln	Tyr	Pro	Ile	Gln	Tyr	Lys	Asp	Asn	Ser	Ile	Arg
		115					120					125			
Phe	Thr	Glu	Lys	Thr	Pro	Ser	Glu	Arg	Tyr	Asp	Glu	Phe	Val	Phe	Ser
	130						135				140				

Ser Phe Asp Ser Ser Leu Leu Lys Lys Tyr Lys Ile Tyr Asp Tyr Leu  
 145 150 155 160

Leu Lys His Pro Glu Thr Glu Leu Lys Gly Val Ser Tyr Lys Ile Pro  
 165 170 175

Ile Asn Ser Glu Ile Val Ala Pro Phe Ile Asn Gln Leu Asn Ile Lys  
 180 185 190

Asn Pro Lys Lys Ser Ser Ile Ser Val Thr Lys Thr Glu Ser Lys Glu  
 195 200 205

Tyr Tyr Tyr Thr Ile Ser Ile Asp Thr Asp Ser Glu Ile Tyr Ser Ile  
 210 215 220

Phe Glu Gly Ile His  
 225

<210> 157  
 <211> 272  
 <212> DNA  
 <213> Streptococcus agalactiae

<400> 157  
 atgacatttg acaccattga tcaattagcg gttaatacag tccgcacgct ttctattgat 60  
 gctatccaag cagcaaattc tgggcaccca ggtcttcta tgggagctgc gcctatggct 120  
 tatgtgcttt ggaataaatt cttaaagtga aacccaaaaa caagtcgcaa ttggacaaac 180  
 cgtgaccggt ttgtactttc agctgggcat ggttcagctc ttctttatag cctacttcac 240  
 ttagctgggt atgatttata aattgatgat tt 272

<210> 158  
 <211> 90  
 <212> PRT  
 <213> Streptococcus agalactiae

<400> 158

Met Thr Phe Asp Thr Ile Asp Gln Leu Ala Val Asn Thr Val Arg Thr  
 1 5 10 15

Leu Ser Ile Asp Ala Ile Gln Ala Ala Asn Ser Gly His Pro Gly Leu  
 20 25 30

Pro Met Gly Ala Ala Pro Met Ala Tyr Val Leu Trp Asn Lys Phe Leu  
 35 40 45

Asn Val Asn Pro Lys Thr Ser Arg Asn Trp Thr Asn Arg Asp Arg Phe  
 50 55 60

Val Leu Ser Ala Gly His Gly Ser Ala Leu Leu Tyr Ser Leu Leu His  
 65 70 75 80

Leu Ala Gly Tyr Asp Leu Ser Ile Asp Asp  
85 90

<210> 159  
<211> 197  
<212> DNA  
<213> Streptococcus agalactiae

<400> 159  
atgagaacac tatttagaat gatatttgct attccaaagt ttatcttttag attgatttgg 60  
aatatcattt ggggaatatt caagacagtt cttgttattg cgattatttt atttggttg 120  
tattactatg cgaatcacag tcaatcagaa ttgtctaata aacttagtga cattattcag 180  
acaggaaaaa cattttt 197

<210> 160  
<211> 65  
<212> PRT  
<213> Streptococcus agalactiae

<400> 160

Met Arg Thr Leu Phe Arg Met Ile Phe Ala Ile Pro Lys Phe Ile Phe  
1 5 10 15  
Arg Leu Ile Trp Asn Ile Ile Trp Gly Ile Phe Lys Thr Val Leu Val  
20 25 30  
Ile Ala Ile Ile Leu Phe Gly Leu Tyr Tyr Tyr Ala Asn His Ser Gln  
35 40 45  
Ser Glu Phe Ala Asn Gln Leu Ser Asp Ile Ile Gln Thr Gly Lys Thr  
50 55 60

Phe  
65

<210> 161  
<211> 153  
<212> DNA  
<213> Streptococcus agalactiae

<400> 161  
atgtcaaaaa aaataatatt aggaatttta tctcttttat ctgtcgttac tttggtggcg 60  
tgtggttcat cagacaaaca gctacaagat aaagttgaga aaaaaggga gttagtttta 120  
gcggtgagtc cagattatgc tccctttgag ttt 153

<210> 162  
<211> 51  
<212> PRT

<213> Streptococcus agalactiae

<400> 162

Met Ser Lys Lys Ile Ile Leu Gly Ile Leu Ser Leu Leu Ser Val Val  
1 5 10 15

Thr Leu Val Ala Cys Gly Ser Ser Asp Lys Gln Leu Gln Asp Lys Val  
20 25 30

Glu Lys Lys Gly Lys Leu Val Leu Ala Val Ser Pro Asp Tyr Ala Pro  
35 40 45

Phe Glu Phe  
50

<210> 163

<211> 138

<212> DNA

<213> Streptococcus agalactiae

<400> 163

atgaaaaatc aaagactatt actgcttttt ggaggcttat taataatgat aatgatgaca 60

gcatgtaagg attcaaaaat cccagaaaac cgcacgaaaa aggaatacca ggcagaacag 120

aattttaagt catacttt 138

<210> 164

<211> 46

<212> PRT

<213> Streptococcus agalactiae

<400> 164

Met Lys Asn Gln Arg Leu Leu Leu Leu Phe Gly Gly Leu Leu Ile Met  
1 5 10 15

Ile Met Met Thr Ala Cys Lys Asp Ser Lys Ile Pro Glu Asn Arg Thr  
20 25 30

Lys Lys Glu Tyr Gln Ala Glu Gln Asn Phe Lys Ser Tyr Phe  
35 40 45

<210> 165

<211> 423

<212> DNA

<213> Streptococcus agalactiae

<400> 165

atgattggaa aattatatta tagctataga aagtcacgct tattaagaag tattttatgg 60

cttatttttaa ttgttggtgt atatatgtta ggacaacgtg ttttattatc cactgttcct 120

ttatcacatc aagagataaa actagcagta gatcaacatt tactcaataa cttttcagca 180

gtaagtgggtg ggagtttttaa taaattaaat gttttcacac tgggggttgag tccatggatg 240  
tcaagtatga ttatttggag attcgtttcc ttattttcgt gggcaaaaaa tgcaacgaag 300  
cgaaaagcag aagtagctca atatacttta atgcttacta tctcagttat acaagcatat 360  
gggtgtttcag gaaatcaatt tataaaaagc tctttattag gttcttatag tgatattggt 420  
ttt 423

<210> 166  
<211> 141  
<212> PRT  
<213> Streptococcus agalactiae

<400> 166

Met Ile Gly Lys Leu Tyr Tyr Ser Tyr Arg Lys Ser Arg Leu Leu Arg  
1 5 10 15  
Ser Ile Leu Trp Leu Ile Leu Ile Val Gly Val Tyr Met Leu Gly Gln  
20 25 30  
Arg Val Leu Leu Ser Thr Val Pro Leu Ser His Gln Glu Ile Lys Leu  
35 40 45  
Ala Val Asp Gln His Leu Leu Asn Asn Phe Ser Ala Val Ser Gly Gly  
50 55 60  
Ser Phe Asn Lys Leu Asn Val Phe Thr Leu Gly Leu Ser Pro Trp Met  
65 70 75 80  
Ser Ser Met Ile Ile Trp Arg Phe Val Ser Leu Phe Ser Trp Ala Lys  
85 90 95  
Asn Ala Thr Lys Arg Lys Ala Glu Val Ala Gln Tyr Thr Leu Met Leu  
100 105 110  
Thr Ile Ser Val Ile Gln Ala Tyr Gly Val Ser Gly Asn Gln Phe Ile  
115 120 125  
Lys Ser Ser Leu Leu Gly Ser Tyr Ser Asp Ile Val Phe  
130 135 140

<210> 167  
<211> 348  
<212> DNA  
<213> Streptococcus agalactiae

<400> 167

atgaaagggtc tattggatgtt tttagttaat attgccagaa cgccagctat tttagtcgcc 60  
ttgatagcca ttatcggttt agtactgcag aaaaaagggtg ttcttgatat tgtaaaagggt 120  
ggaataaaaa catttggttg cttcttagtg gtttctgaag gtgcagggat agtccaaaat 180

tccttgaatc catttggaag aatgtttgaa catgcttttc atttggtggg ggtagttcct 240  
aataatgaag ccattgtagc agtagctctt acgaagtatg gctcagcaac tgctttgatt 300  
atggttagcgg gaatgatttt taatatttta attgctcggt ttacaaaa 348

<210> 168  
<211> 116  
<212> PRT  
<213> Streptococcus agalactiae

<400> 168

Met Lys Gly Leu Leu Asp Phe Leu Val Asn Ile Ala Arg Thr Pro Ala  
1 5 10 15  
Ile Leu Val Ala Leu Ile Ala Ile Ile Gly Leu Val Leu Gln Lys Lys  
20 25 30  
Gly Val Pro Asp Ile Val Lys Gly Gly Ile Lys Thr Phe Val Gly Phe  
35 40 45  
Leu Val Val Ser Glu Gly Ala Gly Ile Val Gln Asn Ser Leu Asn Pro  
50 55 60  
Phe Gly Lys Met Phe Glu His Ala Phe His Leu Val Gly Val Val Pro  
65 70 75 80  
Asn Asn Glu Ala Ile Val Ala Val Ala Leu Thr Lys Tyr Gly Ser Ala  
85 90 95  
Thr Ala Leu Ile Met Leu Ala Gly Met Ile Phe Asn Ile Leu Ile Ala  
100 105 110  
Arg Phe Thr Lys  
115

<210> 169  
<211> 464  
<212> DNA  
<213> Streptococcus agalactiae

<400> 169

ttggttggtgta agccccaatt actatttttta gatgaacctt cttccggaat ggataacttcc 60  
acacgtcaac gatttttgaa gctggttgcg acactaaaaa aagaaggtga cacaattgtc 120  
tattctagtc attatatcga agaggtagaa catacagctg ataggatttt agtacttcat 180  
aaaggaaagt tattacgca tacaaccccc ttgcatga agcaagaaaa aaccgaaaag 240  
ttattcaccg ttccgcttag ttatcaaaaa ttattacctt cctatttgat tacagagtgt 300  
gaagccaaga gtgatagtat aacgtttggt actggggagg ctgaaactgt atggaaaata 360  
ctggcagata atggttggtcc tattgaagct attgagatga ccaatagaac ttgtttaaat 420

cgtatttttg agactactaa ggaggtaaaa catgagaatc tttta

464

<210> 170

<211> 154

<212> PRT

<213> Streptococcus agalactiae

<400> 170

Met Val Gly Lys Pro Gln Leu Leu Phe Leu Asp Glu Pro Thr Ser Gly  
1 5 10 15

Met Asp Thr Ser Thr Arg Gln Arg Phe Trp Lys Leu Val Ala Thr Leu  
20 25 30

Lys Lys Glu Gly Asp Thr Ile Val Tyr Ser Ser His Tyr Ile Glu Glu  
35 40 45

Val Glu His Thr Ala Asp Arg Ile Leu Val Leu His Lys Gly Lys Leu  
50 55 60

Leu Arg Asp Thr Thr Pro Phe Ala Met Lys Gln Glu Lys Thr Glu Lys  
65 70 75 80

Leu Phe Thr Val Pro Leu Ser Tyr Gln Lys Leu Leu Pro Thr Tyr Leu  
85 90 95

Ile Thr Glu Cys Glu Ala Lys Ser Asp Ser Ile Thr Phe Val Thr Gly  
100 105 110

Glu Ala Glu Thr Val Trp Lys Ile Leu Ala Asp Asn Gly Cys Pro Ile  
115 120 125

Glu Ala Ile Glu Met Thr Asn Arg Thr Leu Leu Asn Arg Ile Phe Glu  
130 135 140

Thr Thr Lys Glu Val Lys His Glu Asn Leu  
145 150

<210> 171

<211> 360

<212> DNA

<213> Streptococcus agalactiae

<400> 171

ttgaaaaaat ccaagagaag ccgtaaggca gtgacaacaa gtggtgagaa gactttactt 60

gaggatttgg caaaaatgaa tttoctagac gaagtcatta atgttatggt tttatatacc 120

ttgaataaga caaaatctgc taacttaaat aaggcctata tcatgaaagt tgctaataatgat 180

tttgcccttc agaatgttat gacggccgaa gatgctgtgc ttaaaattcg tgatttttca 240

gatcaaaaag taaggactaa aacagaaacg aagaagaaac aatcgaatgt tcttgaatgg 300

agtaatcctg attataaaga tgaggtttagc ccagaaaaag aaattgaatt agaacagttt 360

<210> 172

<211> 120

<212> PRT

<213> Streptococcus agalactiae

<400> 172

Met Lys Lys Ser Lys Arg Ser Arg Lys Ala Val Thr Thr Ser Gly Glu  
1 5 10 15

Lys Thr Leu Leu Glu Asp Leu Ala Lys Met Asn Phe Leu Asp Glu Val  
20 25 30

Ile Asn Val Met Val Leu Tyr Thr Leu Asn Lys Thr Lys Ser Ala Asn  
35 40 45

Leu Asn Lys Ala Tyr Ile Met Lys Val Ala Asn Asp Phe Ala Phe Gln  
50 55 60

Asn Val Met Thr Ala Glu Asp Ala Val Leu Lys Ile Arg Asp Phe Ser  
65 70 75 80

Asp Gln Lys Val Arg Thr Lys Thr Glu Thr Lys Lys Lys Gln Ser Asn  
85 90 95

Val Pro Glu Trp Ser Asn Pro Asp Tyr Lys Asp Glu Val Ser Pro Glu  
100 105 110

Lys Glu Ile Glu Leu Glu Gln Phe  
115 120

<210> 173

<211> 216

<212> DNA

<213> Streptococcus agalactiae

<400> 173

atgacgaatc atattactaa actgatagaa aatagcggaa aaaaattgac agaaattagc 60

gaagctacag atatagccta tcctacactt tctggataca atcaaggaat ccgcaaactt 120

aaaaaagata atgctgaaaa attggcaaaa tactttaatg tttccgtcgc ttacattatg 180

ggacttgata gcaaccacaca tgctccatca aatctt 216

<210> 174

<211> 72

<212> PRT

<213> Streptococcus agalactiae

<400> 174

Met Thr Asn His Ile Thr Lys Leu Ile Glu Asn Ser Gly Lys Lys Leu



[illegible]

<400>	175									
ttgatgaaaa	ggaataaaca	tttaccgtta	acagaaacta	cctattatat	tttatttagct					60
ttgtttgagg	aagcgcgatg	ctatgctatt	atgaaaaaag	ttgaagaaat	gagtggcggt					120
gatgttagaa	tagccgcagg	gacaatgtac	ggtgccattg	aaaatttact	taaacaaaaa					180
tggataaaagt	ctatctcaag	tgacgataga	agaagaaaag	tttatattat	tactgagaca					240
ggaaaagaaa	tagtagaact	tgaaacgaat	cgattaagaa	agttacttaa	tactgctaata					300
cagttggggtt	ttggaggaga	tggttatgat	aaagttt							337

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<210> 176
<211> 112
<212> PRT
<213> Streptococcus agalactiae
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<400> 176

Met	Met	Lys	Arg	Asn	Lys	His	Leu	Pro	Leu	Thr	Glu	Thr	Thr	Tyr	Tyr
1				5					10					15	
Ile	Leu	Leu	Ala	Leu	Phe	Glu	Glu	Ala	His	Gly	Tyr	Ala	Ile	Met	Lys
			20					25					30		
Lys	Val	Glu	Glu	Met	Ser	Gly	Gly	Asp	Val	Arg	Ile	Ala	Ala	Gly	Thr
		35					40					45			
Met	Tyr	Gly	Ala	Ile	Glu	Asn	Leu	Leu	Lys	Gln	Lys	Trp	Ile	Lys	Ser
	50					55					60				
Ile	Ser	Ser	Asp	Asp	Arg	Arg	Arg	Lys	Val	Tyr	Ile	Ile	Thr	Glu	Thr
65					70					75					80
Gly	Lys	Glu	Ile	Val	Glu	Leu	Glu	Thr	Asn	Arg	Leu	Arg	Lys	Leu	Leu
				85					90					95	

Asn Thr Ala Asn Gln Leu Gly Phe Gly Gly Asp Gly Tyr Asp Lys Val  
 100 105 110

<210> 177

<211> 511

<212> DNA

<213> Streptococcus agalactiae

<400> 177

cccattactg gtgagttaat agctgagaaa ttaggagtag caagagcagc actaaggctct 60  
 gatttgcggg ttttaagtat gctaggtagt atagatgcaa aacctaagggt tggttatttt 120  
 tatttaggac agtatcatgc ttcaataggg acaagtcatt ttgaaaagat gacagtttca 180  
 gaaattatgg ggatccttct gacagttcat caaaaagatt cagtttatga tgttattgta 240  
 catattttta tggaagatgc tggttgtgct tttatcttgg atgatgatga ttttctctgt 300  
 ggagtcgtgt cacgtaaaga tttactaaaa accagtattg gcggaggaga tctttctaaa 360  
 atgccaatag gaatggtgat gacacgtatg ccacacgtga caactgtttt agaaaatgaa 420  
 agtctttttg cggcagctga taaattagtg agcagaaaaag tggatagtct ccctgtcgtt 480  
 cgtcatgata agcaatatcc cgaaaaattt a 511

<210> 178

<211> 170

<212> PRT

<213> Streptococcus agalactiae

<400> 178

Pro Ile Thr Gly Glu Leu Ile Ala Glu Lys Leu Gly Val Pro Arg Ala  
 1 5 10 15  
 Ala Leu Arg Ser Asp Leu Arg Val Leu Ser Met Leu Gly Ile Ile Asp  
 20 25 30  
 Ala Lys Pro Lys Val Gly Tyr Phe Tyr Leu Gly Gln Tyr His Ala Ser  
 35 40 45  
 Ile Gly Thr Ser His Phe Glu Lys Met Thr Val Ser Glu Ile Met Gly  
 50 55 60  
 Ile Leu Leu Thr Val His Gln Lys Asp Ser Val Tyr Asp Val Ile Val  
 65 70 75 80  
 His Ile Phe Met Glu Asp Ala Gly Cys Ala Phe Ile Leu Asp Asp Asp  
 85 90 95  
 Asp Phe Leu Cys Gly Val Val Ser Arg Lys Asp Leu Leu Lys Thr Ser  
 100 105 110

Ile Gly Gly Gly Asp Leu Ser Lys Met Pro Ile Gly Met Val Met Thr  
 115 120 125

Arg Met Pro His Val Thr Thr Val Leu Glu Asn Glu Ser Leu Phe Ala  
 130 135 140

Ala Ala Asp Lys Leu Val Ser Arg Lys Val Asp Ser Leu Pro Val Val  
 145 150 155 160

Arg His Asp Lys Gln Tyr Pro Glu Lys Phe  
 165 170

<210> 179  
 <211> 233  
 <212> DNA  
 <213> Streptococcus agalactiae

<400> 179  
 ttggaagtca tcatgcaatt tatttatagt attattggta ttttattggg attaggaatt 60  
 gtgtatgcaa tttctttcaa tcgtaagagt gtttctctaa gtttaattgg aaaagctctt 120  
 atcgttcaat tcattattgc gctaattctta gtacgtatcc cactaggcca acaagttggt 180  
 agtggtgttt caactggagt tactaaagta atcaactgtg gtcaagctgg ttt 233

<210> 180  
 <211> 77  
 <212> PRT  
 <213> Streptococcus agalactiae

<400> 180

Met Glu Val Ile Met Gln Phe Ile Tyr Ser Ile Ile Gly Ile Leu Leu  
 1 5 10 15

Val Leu Gly Ile Val Tyr Ala Ile Ser Phe Asn Arg Lys Ser Val Ser  
 20 25 30

Leu Ser Leu Ile Gly Lys Ala Leu Ile Val Gln Phe Ile Ile Ala Leu  
 35 40 45

Ile Leu Val Arg Ile Pro Leu Gly Gln Gln Val Val Ser Val Val Ser  
 50 55 60

Thr Gly Val Thr Lys Val Ile Asn Cys Gly Gln Ala Gly  
 65 70 75

<210> 181  
 <211> 344  
 <212> DNA  
 <213> Streptococcus agalactiae

<400> 181  
 caaccttaata aagctttaga aagtgatgag attgatatta atgctttcca gcattataat 60

tacttaacca attggaataa agcaaataag accaatcttg tttccgttgc tgagacatac 120  
 tttacttctt ttagattata ctctggtact aagaacggtg aaggtaaata ccaaacagtt 180  
 tctgaaattc caaataaagc aactattact atcccaaacy atgcagttaa cgaaagtcgc 240  
 tctctctact tgttacaatc agcaggcttg ctaaaattga aagtatcagg tgatacatta 300  
 gcaacaatgt cagatgttgt ttccaatcct aaatctttag attt 344

<210> 182  
 <211> 114  
 <212> PRT  
 <213> Streptococcus agalactiae

<400> 182

Gln Pro Asn Lys Ala Leu Glu Ser Asp Glu Ile Asp Ile Asn Ala Phe  
 1 5 10 15  
 Gln His Tyr Asn Tyr Leu Thr Asn Trp Asn Lys Ala Asn Lys Thr Asn  
 20 25 30  
 Leu Val Ser Val Ala Glu Thr Tyr Phe Thr Ser Phe Arg Leu Tyr Ser  
 35 40 45  
 Gly Thr Lys Asn Gly Lys Gly Lys Tyr Gln Thr Val Ser Glu Ile Pro  
 50 55 60  
 Asn Lys Ala Thr Ile Thr Ile Pro Asn Asp Ala Val Asn Glu Ser Arg  
 65 70 75 80  
 Ser Leu Tyr Leu Leu Gln Ser Ala Gly Leu Leu Lys Leu Lys Val Ser  
 85 90 95  
 Gly Asp Thr Leu Ala Thr Met Ser Asp Val Val Ser Asn Pro Lys Ser  
 100 105 110  
 Leu Asp

<210> 183  
 <211> 264  
 <212> DNA  
 <213> Streptococcus agalactiae

<400> 183

atgaaatgta taataaataa tataaataaa ataaaaatga taattgagat ttatcataga 60  
 aggaaaacta ttttgaaatt aaataaaaatc atattatcta ctgcagctct tactgctctc 120  
 tttttaggat ataatagcgt tactgcggtat acatataata actatcagcc acatagatca 180  
 aataatatgg atttaactga ggaatataac tataataacc agatagaact tcaggagcgt 240  
 ataaaaaacc taaatatacc tttt 264

<210> 184  
 <211> 88  
 <212> PRT  
 <213> Streptococcus agalactiae

<400> 184

Met	Lys	Cys	Ile	Ile	Asn	Asn	Ile	Asn	Lys	Ile	Lys	Met	Ile	Ile	Glu
1				5					10					15	
Ile	Tyr	His	Arg	Arg	Lys	Thr	Ile	Leu	Lys	Leu	Asn	Lys	Ile	Ile	Leu
			20					25					30		
Ser	Thr	Ala	Ala	Leu	Thr	Ala	Leu	Phe	Leu	Gly	Tyr	Asn	Ser	Val	Thr
		35					40					45			
Ala	Asp	Thr	Tyr	Asn	Asn	Tyr	Gln	Pro	His	Arg	Ser	Asn	Asn	Met	Asp
	50					55					60				
Leu	Thr	Glu	Glu	Tyr	Asn	Tyr	Asn	Asn	Gln	Ile	Glu	Leu	Gln	Glu	Arg
65					70				75					80	
Ile	Lys	Asn	Leu	Asn	Ile	Pro	Phe								
				85											

<210> 185  
 <211> 926  
 <212> DNA  
 <213> Streptococcus agalactiae

<400> 185

ttgggtgatt attatggtaa gaaatatttt ggtgaggcag ctaaaaaaga cgtcgaacat	60
atggctaaga aaatcattaa tgtctataaa acacgggttaa aaaacaacac ttggttatca	120
gaaaatacaa aagcaatggc cattaagaaa cttgataaca tgagattaat gattggctat	180
ccagaagatt atcctgatct ttatcgtcag taccaatttg atagtaaagc aagcttcttt	240
gaaaacaatg ataactacag aaaattatcg aacaagaaaa catttgaaga atttaaccag	300
tctaatacaac gtgaacattg gcaaatgagt gccaatgctg taaatgctta taatgatcct	360
aataccaatt ccatagtctt tccagcagcg atttttcaat caccactgta cgataaaact	420
aaaacagtta gtcaaaatta tggagctatc ggagcaatta ttggtcatga aatttcacac	480
tcatttgata ttaatgggtat gaaatatgac gagaaagggg atcttcacga ttggtggact	540
aaagaagatt taaatcatta taagaaatca acacaagcta tgattgacca atgggatggc	600
cttaaagcag atggcggtta agttgatggg aaattaactt tagcagaaaa tattgcagat	660
aatggtggtg ttatggcatc tctagaagct cttaagactg aaaaaatcca aactataaag	720

aattttttga atcatgggca agtatttggc gtcaaaaagc aaccaaagaa caaagtaagt 780  
cctcaattca gtcagatgtt catgcaccat atgaattgag agctaacatc ccagtagcta 840  
atttccaaga attttatgat gcctttggtg ttaaaaaagg cgattcaatg tatctaaaac 900  
cagaaaaacg tttgacactt tggtaa 926

<210> 186  
<211> 271  
<212> PRT  
<213> Streptococcus agalactiae

<400> 186

Met	Gly	Asp	Tyr	Tyr	Gly	Lys	Lys	Tyr	Phe	Gly	Glu	Ala	Ala	Lys	Lys	1	5	10	15
Asp	Val	Glu	His	Met	Ala	Lys	Lys	Ile	Ile	Asn	Val	Tyr	Lys	Thr	Arg	20	25	30	
Leu	Lys	Asn	Asn	Thr	Trp	Leu	Ser	Glu	Asn	Thr	Lys	Ala	Met	Ala	Ile	35	40	45	
Lys	Lys	Leu	Asp	Asn	Met	Arg	Leu	Met	Ile	Gly	Tyr	Pro	Asp	Tyr	Pro	50	55	60	
Asp	Leu	Tyr	Arg	Gln	Tyr	Gln	Phe	Asp	Ser	Lys	Ala	Ser	Phe	Phe	Glu	65	70	75	80
Asn	Asn	Asp	Asn	Tyr	Arg	Lys	Leu	Ser	Asn	Lys	Lys	Thr	Phe	Glu	Glu	85	90	95	
Phe	Asn	Gln	Ser	Asn	Gln	Arg	Glu	His	Trp	Gln	Met	Ser	Ala	Asn	Ala	100	105	110	
Val	Asn	Ala	Tyr	Asn	Asp	Pro	Asn	Thr	Asn	Ser	Ile	Val	Phe	Pro	Ala	115	120	125	
Ala	Ile	Phe	Gln	Ser	Pro	Leu	Tyr	Asp	Lys	Thr	Lys	Thr	Val	Ser	Gln	130	135	140	
Asn	Tyr	Gly	Ala	Ile	Gly	Ala	Ile	Ile	Gly	His	Glu	Ile	Ser	His	Ser	145	150	155	160
Phe	Asp	Ile	Asn	Gly	Met	Lys	Tyr	Asp	Glu	Lys	Gly	Asn	Leu	His	Asp	165	170	175	
Trp	Trp	Thr	Lys	Glu	Asp	Leu	Asn	His	Tyr	Lys	Lys	Ser	Thr	Gln	Ala	180	185	190	
Met	Ile	Asp	Gln	Trp	Asp	Gly	Leu	Lys	Ala	Asp	Gly	Gly	Lys	Val	Asp	195	200	205	
Gly	Lys	Leu	Thr	Leu	Ala	Glu	Asn	Ile	Ala	Asp	Asn	Gly	Gly	Val	Met	210	215	220	

Ala Ser Leu Glu Ala Leu Lys Thr Glu Lys Ile Gln Thr Ile Lys Asn  
 225 230 235 240

Phe Leu Asn His Gly Gln Val Phe Gly Val Lys Lys Gln Pro Lys Asn  
 245 250 255

Lys Val Ser Pro Gln Phe Ser Gln Met Phe Met His His Met Asn  
 260 265 270

<210> 187  
 <211> 636  
 <212> DNA  
 <213> Streptococcus agalactiae

<400> 187  
 atgaccatga ttacgccaaag cttcattaag gtatctctag atgaaacaaa tcgtatgatg 60  
 cgtatgatat cagattttatt aagttttatcg cgcattgata atgaagtaac gcatttagat 120  
 gttgaaatga cgaatttttac agcttttcag acctcaattt tgaatcgatt tgatcagatt 180  
 agaaatcaaa aaacagtcac aggaaaagtt tatgaaattg tcagagatta tcctcttaag 240  
 tcaatttggg tggaattga tacagataag atgactcaag tgattgataa cattttaaat 300  
 aatgcagtca agtattcacc agatggtggt aagattacag ttaatctacg cacaactaaa 360  
 acgcagatga ttttatcaat atcagaccaa ggcttaggta ttccccaaaa agatttacct 420  
 ctcatttttg atcgttttta tcgtgttgat aaggcgagaa gtcgtcaaca ggggtgggact 480  
 ggacttggtt tgtcaattgc aaaagaaatt gttaagcagc ataagggatt tatttgggct 540  
 aagagtgagt atggtaaagg gtctactttt acaatcgtct tgccttatga taaagatgct 600  
 gtaacttatg aagaatggga ggacgttgaa gattaa 636

<210> 188  
 <211> 211  
 <212> PRT  
 <213> Streptococcus agalactiae

<400> 188

Met Thr Met Ile Thr Pro Ser Phe Ile Lys Val Ser Leu Asp Glu Thr  
 1 5 10 15

Asn Arg Met Met Arg Met Ile Ser Asp Leu Leu Ser Leu Ser Arg Ile  
 20 25 30

Asp Asn Glu Val Thr His Leu Asp Val Glu Met Thr Asn Phe Thr Ala  
 35 40 45

Phe Met Thr Ser Ile Leu Asn Arg Phe Asp Gln Ile Arg Asn Gln Lys  
 50 55 60

Thr Val Thr Gly Lys Val Tyr Glu Ile Val Arg Asp Tyr Pro Leu Lys  
 65 70 75 80  
 Ser Ile Trp Val Glu Ile Asp Thr Asp Lys Met Thr Gln Val Ile Asp  
 85 90 95  
 Asn Ile Leu Asn Asn Ala Val Lys Tyr Ser Pro Asp Gly Gly Lys Ile  
 100 105 110  
 Thr Val Asn Leu Arg Thr Thr Lys Thr Gln Met Ile Leu Ser Ile Ser  
 115 120 125  
 Asp Gln Gly Leu Gly Ile Pro Lys Lys Asp Leu Pro Leu Ile Phe Asp  
 130 135 140  
 Arg Phe Tyr Arg Val Asp Lys Ala Arg Ser Arg Gln Gln Gly Gly Thr  
 145 150 155 160  
 Gly Leu Gly Leu Ser Ile Ala Lys Glu Ile Val Lys Gln His Lys Gly  
 165 170 175  
 Phe Ile Trp Ala Lys Ser Glu Tyr Gly Lys Gly Ser Thr Phe Thr Ile  
 180 185 190  
 Val Leu Pro Tyr Asp Lys Asp Ala Val Thr Tyr Glu Glu Trp Glu Asp  
 195 200 205  
 Val Glu Asp  
 210

<210> 189  
 <211> 1236  
 <212> DNA  
 <213> Streptococcus agalactiae

<400> 189  
 ttgaaaaaaa ttattacttc tattctatta cttagttgca ttttttttat gccaacccatc 60  
 tctgctgaat cttttaatgc ttccgctaaa catgccttag cagttgattt agattcagga 120  
 aaaatcttgt atgaaaaaga tgctaacaaa cccgctgcta ttgcttcctt gactaaaata 180  
 atgaccgttt atatggtcta taaagaaatt gataacggtg acctcaagtg gaataccaaa 240  
 gttaaataat ctgactaccc ttatcaacta acacgcgaat ctgatgctag taatgttcct 300  
 ttagaaaaaa ggcgctatac tggttaacaa ctcgtggacg ctgccatgat ttctagtgtc 360  
 aacagtgcag ccattgcttt agctgaacat atttcaggaa ctgaaagtaa atttggtgat 420  
 aaaatgactg ctcaattgga aaagtgggga attcatgata gccacctagt caatgcttct 480  
 ggcttaaata atagtatgtt aggcaatcac atttatccaa aatcgtcaca aaacgacgaa 540  
 aataaaatga gtgcacgtga tattgctatt gctgcctacc atttggtcaa cgaatatcct 600



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tccattctta agattactag taagtccgtt gctaaatttg ataaagatat tatgcattct 660
tataactaca tgctaccaga tatgcctgtc tttagaccag gtattacagg tttgaaaact 720
gggacaacgg aattagctgg ccaatctttt attgctacat ctactgaaag tggaatgaga 780
ctactcactg ttattatgca tgctgataag gccgataaag acaaatatgc tcgctttaca 840
gcaactaact ctctcttgaa ctatatcaca aacacctacg aacctaacct tgtattagct 900
aaaggagctg catataaagg taaagaagca agtgtgagag acggaaaaga acaatcggtc 960
atcgctgttg ctaaaaacga tttgaaagta gtacagaaga aaaatatcac taaacaaaat 1020
cagttaaaaa ttaactttta aaaagagctt actgctccta ttacaaaaaa agagaacct 1080
gggaaagctt attacgttga ccttaataag gttggaaaag gctatctcat aaaggaacct 1140
agcggttcatt tagtggcaaa agatagtatt gagcgcagtt tcttctcaa agtgtggtgg 1200
aatcattttg tgcgctacgt taacgaaaaa ctttaa 1236

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<210> 190
<211> 411
<212> PRT
<213> Streptococcus agalactiae

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<400> 190

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Met Lys Lys Ile Ile Thr Ser Ile Leu Leu Leu Ser Cys Ile Phe Phe
1           5           10          15

Met Pro Thr Ile Ser Ala Glu Ser Phe Asn Ala Ser Ala Lys His Ala
          20           25           30

Leu Ala Val Asp Leu Asp Ser Gly Lys Ile Leu Tyr Glu Lys Asp Ala
      35           40           45

Asn Lys Pro Ala Ala Ile Ala Ser Leu Thr Lys Ile Met Thr Val Tyr
 50           55           60

Met Val Tyr Lys Glu Ile Asp Asn Gly Asn Leu Lys Trp Asn Thr Lys
65           70           75           80

Val Asn Ile Ser Asp Tyr Pro Tyr Gln Leu Thr Arg Glu Ser Asp Ala
          85           90           95

Ser Asn Val Pro Leu Glu Lys Arg Arg Tyr Thr Val Lys Gln Leu Val
100          105          110

Asp Ala Ala Met Ile Ser Ser Ala Asn Ser Ala Ala Ile Ala Leu Ala
115          120          125

Glu His Ile Ser Gly Thr Glu Ser Lys Phe Val Asp Lys Met Thr Ala
130          135          140

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Gln Leu Glu Lys Trp Gly Ile His Asp Ser His Leu Val Asn Ala Ser  
145 150 155 160

Gly Leu Asn Asn Ser Met Leu Gly Asn His Ile Tyr Pro Lys Ser Ser  
165 170 175

Gln Asn Asp Glu Asn Lys Met Ser Ala Arg Asp Ile Ala Ile Ala Ala  
180 185 190

Tyr His Leu Val Asn Glu Tyr Pro Ser Ile Leu Lys Ile Thr Ser Lys  
195 200 205

Ser Val Ala Lys Phe Asp Lys Asp Ile Met His Ser Tyr Asn Tyr Met  
210 215 220

Leu Pro Asp Met Pro Val Phe Arg Pro Gly Ile Thr Gly Leu Lys Thr  
225 230 235 240

Gly Thr Thr Glu Leu Ala Gly Gln Ser Phe Ile Ala Thr Ser Thr Glu  
245 250 255

Ser Gly Met Arg Leu Leu Thr Val Ile Met His Ala Asp Lys Ala Asp  
260 265 270

Lys Asp Lys Tyr Ala Arg Phe Thr Ala Thr Asn Ser Leu Leu Asn Tyr  
275 280 285

Ile Thr Asn Thr Tyr Glu Pro Asn Leu Val Leu Ala Lys Gly Ala Ala  
290 295 300

Tyr Lys Gly Lys Glu Ala Ser Val Arg Asp Gly Lys Glu Gln Ser Val  
305 310 315 320

Ile Ala Val Ala Lys Asn Asp Leu Lys Val Val Gln Lys Lys Asn Ile  
325 330 335

Thr Lys Gln Asn Gln Leu Lys Ile Asn Phe Lys Lys Glu Leu Thr Ala  
340 345 350

Pro Ile Thr Lys Lys Glu Asn Leu Gly Lys Ala Tyr Tyr Val Asp Leu  
355 360 365

Asn Lys Val Gly Lys Gly Tyr Leu Ile Lys Glu Pro Ser Val His Leu  
370 375 380

Val Ala Lys Asp Ser Ile Glu Arg Ser Phe Phe Leu Lys Val Trp Trp  
385 390 395 400

Asn His Phe Val Arg Tyr Val Asn Glu Lys Leu  
405 410

<210> 191

<211> 771

<212> DNA

<213> Streptococcus agalactiae

<400> 191

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 caatcatttt tacaacacc tgagatggct aaacttttag aaaaacgcgg ctatgatgtt 120  
 aggtatttgg gatatcaagt agaaaataaa ctagagataa tcagtttatc ttatattatg 180  
 ccagtcactg gtggttttca aatgaaaatt gattcaggac cagttcattc aaattctaag 240  
 tatctaaaac aattttataa agcattgcaa ggctatgcca aatccaacgg tgttctagaa 300  
 ttaatagttg agccttttga tgattaccaa ttattcacta gttcgggagt tcctagtaat 360  
 cagggaaatg ataatctgat tgaagatttt accagttcag gttatcacca tgatggttta 420  
 acaactgggt ttactggtaa atatttatct tggcactatg ttaaaaattt agaagggtgc 480  
 acttctgaaa cgttactatc ttcattctct aagacaggac gagctttggg taagaaagca 540  
 atgtcttttg gaatcaagg tgcggttctt aaacgtgatg agctacattt atttaaagag 600  
 ataacaactt ctacgtcaaa tagacgtgat tatatggata agtccttaga ttattatcaa 660  
 gatttttacg atagctttga aggcaaggct gaatttgatg ttgccacttt aaattttaga 720  
 gaatacgacc ataacttgca aataaaagct gaagcattgg aaaataagct t 771

<210> 192

<211> 257

<212> PRT

<213> Streptococcus agalactiae

<400> 192

Met	Thr	Leu	Arg	Glu	Leu	Thr	Ile	Glu	Glu	Phe	Lys	Glu	His	Ser	Gly	1	5	10	15
Asn	Tyr	Asp	Ser	Gln	Ser	Phe	Leu	Gln	Thr	Pro	Glu	Met	Ala	Lys	Leu	20	25	30	
Leu	Glu	Lys	Arg	Gly	Tyr	Asp	Val	Arg	Tyr	Leu	Gly	Tyr	Gln	Val	Glu	35	40	45	
Asn	Lys	Leu	Glu	Ile	Ile	Ser	Leu	Ser	Tyr	Ile	Met	Pro	Val	Thr	Gly	50	55	60	
Gly	Phe	Gln	Met	Lys	Ile	Asp	Ser	Gly	Pro	Val	His	Ser	Asn	Ser	Lys	65	70	75	80
Tyr	Leu	Lys	Gln	Phe	Tyr	Lys	Ala	Leu	Gln	Gly	Tyr	Ala	Lys	Ser	Asn	85	90	95	
Gly	Val	Leu	Glu	Leu	Ile	Val	Glu	Pro	Phe	Asp	Asp	Tyr	Gln	Leu	Phe	100	105	110	
Thr	Ser	Ser	Gly	Val	Pro	Ser	Asn	Gln	Gly	Asn	Asp	Asn	Leu	Ile	Glu	115	120	125	

Asp Phe Thr Ser Ser Gly Tyr His His Asp Gly Leu Thr Thr Gly Phe  
 130 135 140  
 Thr Gly Lys Tyr Leu Ser Trp His Tyr Val Lys Asn Leu Glu Gly Val  
 145 150 155 160  
 Thr Ser Glu Thr Leu Leu Ser Ser Phe Ser Lys Thr Gly Arg Ala Leu  
 165 170 175  
 Val Lys Lys Ala Met Ser Phe Gly Ile Lys Val Arg Val Leu Lys Arg  
 180 185 190  
 Asp Glu Leu His Leu Phe Lys Glu Ile Thr Thr Ser Thr Ser Asn Arg  
 195 200 205  
 Arg Asp Tyr Met Asp Lys Ser Leu Asp Tyr Tyr Gln Asp Phe Tyr Asp  
 210 215 220  
 Ser Phe Glu Gly Lys Ala Glu Phe Val Ile Ala Thr Leu Asn Phe Arg  
 225 230 235 240  
 Glu Tyr Asp His Asn Leu Gln Ile Lys Ala Glu Ala Leu Glu Asn Lys  
 245 250 255

Leu

<210> 193  
 <211> 534  
 <212> DNA  
 <213> Streptococcus agalactiae

<400> 193  
 ttgtcattaa gtttggttgc agtggttaaatt cttatccctc ctaaaatcat gggatcagtt 60  
 attgatgcta ttacaactgg aaaattaaca agaccacaat tactatggaa tttattaggt 120  
 ttggttttgt cagcttttagc tatgtatggg ctgcgttata tttggcgat gtatatttta 180  
 gggacttctt acaaattagg ccaagttgtc agataccggt tatttgaaca ttttacaaaa 240  
 atgtctcctt ctttttatca gaaatatcgt acaggtgatt taatggcgca cgcgaccaac 300  
 gacatcaatt ctctaacacg tcttgcagga ggaggagtta tgtcagcagt ggatgcctct 360  
 atcacagcat tagtaacgct tatcaccatg ttctttacta tttcgtggca aatgacatta 420  
 attgcgggta tccctttgcc cttaatggcc ttagcactag taaattgggg cgaaaaaccc 480  
 atgaaacctt caaagaatct caggcagccc ttttcagaat taaataataa agtg 534

<210> 194  
 <211> 178  
 <212> PRT  
 <213> Streptococcus agalactiae

<400> 194

Met Ser Leu Ser Leu Val Ala Val Leu Asn Leu Ile Pro Pro Lys Ile  
1 5 10 15

Met Gly Ser Val Ile Asp Ala Ile Thr Thr Gly Lys Leu Thr Arg Pro  
20 25 30

Gln Leu Leu Trp Asn Leu Leu Gly Leu Val Leu Ser Ala Leu Ala Met  
35 40 45

Tyr Gly Leu Arg Tyr Ile Trp Arg Met Tyr Ile Leu Gly Thr Ser Tyr  
50 55 60

Lys Leu Gly Gln Val Val Arg Tyr Arg Leu Phe Glu His Phe Thr Lys  
65 70 75 80

Met Ser Pro Ser Phe Tyr Gln Lys Tyr Arg Thr Gly Asp Leu Met Ala  
85 90 95

His Ala Thr Asn Asp Ile Asn Ser Leu Thr Arg Leu Ala Gly Gly Gly  
100 105 110

Val Met Ser Ala Val Asp Ala Ser Ile Thr Ala Leu Val Thr Leu Ile  
115 120 125

Thr Met Phe Phe Thr Ile Ser Trp Gln Met Thr Leu Ile Ala Val Ile  
130 135 140

Pro Leu Pro Leu Met Ala Leu Ala Leu Val Asn Trp Gly Glu Lys Pro  
145 150 155 160

Met Lys Pro Ser Lys Asn Leu Arg Gln Pro Phe Ser Glu Leu Asn Asn  
165 170 175

Lys Val

<210> 195

<211> 440

<212> DNA

<213> Streptococcus agalactiae

<400> 195

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cctacaaaag aattaatagc tgatacttta gaacaagtct tagaagtgat aaaagaagtt 120

gattattatc aatctcaaaa ttattatggt gttggttatt tatcttatga agcatctgct 180

gcttttgatt cacattttta agttttctcaa cagaagttgg ctggagaaca tctagcttat 240

tttacagtac ataaagattg tgagaacgaa gcttttctct taagttatga aaatggttaga 300

ttagcagata attggactgc taatgtttct gagcaagaat atcaagaggc aattgctaata 360

attaaaggac aaattagaca aggaaatact tatcaagtaa attatacact agagcttagc 420  
 caacaattat gctcggatcc 440

<210> 196  
 <211> 146  
 <212> PRT  
 <213> Streptococcus agalactiae

<400> 196

Met His Ile Glu Thr Val Ile Asp Phe Lys Glu Leu Gly Lys Arg Tyr  
 1 5 10 15  
 Arg Phe Lys Asn Pro Thr Lys Glu Leu Ile Ala Asp Thr Leu Glu Gln  
 20 25 30  
 Val Leu Glu Val Ile Lys Glu Val Asp Tyr Tyr Gln Ser Gln Asn Tyr  
 35 40 45  
 Tyr Val Val Gly Tyr Leu Ser Tyr Glu Ala Ser Ala Ala Phe Asp Ser  
 50 55 60  
 His Phe Lys Val Ser Gln Gln Lys Leu Ala Gly Glu His Leu Ala Tyr  
 65 70 75 80  
 Phe Thr Val His Lys Asp Cys Glu Asn Glu Ala Phe Pro Leu Ser Tyr  
 85 90 95  
 Glu Asn Val Arg Leu Ala Asp Asn Trp Thr Ala Asn Val Ser Glu Gln  
 100 105 110  
 Glu Tyr Gln Glu Ala Ile Ala Asn Ile Lys Gly Gln Ile Arg Gln Gly  
 115 120 125  
 Asn Thr Tyr Gln Val Asn Tyr Thr Leu Glu Leu Ser Gln Gln Leu Cys  
 130 135 140  
 Ser Asp  
 145

<210> 197  
 <211> 1119  
 <212> DNA  
 <213> Streptococcus agalactiae

<400> 197

gtgaataata tgttttatct caaaatagcc tggcataatt taaaacattc tatagaccag 60  
 tacataccat tcctcttagc cagtttatta ctttattcat tgacttggtc tacgctacta 120  
 atcttaatga gtgctgttgg aagagatatg gggacagcgg caacggttct ttttcttgga 180  
 gtgattgttt tgtcaatctt tgcggtagtc atggaacatt atagctacaa tatcttgatg 240  
 aaacagcgta gtagtgaatt tggactgtat aacattttgg ggatgaataa acgtcaagtt 300

gcgcgtgtag ctagtctaga gctgtttatt atttatatat ttcttatttc tataggaagt 360  
 ctgttttagtg ctttttttgc taaatttatt tatttaattt ttgtcaacat tattaactat 420  
 catgcactaa atcttagttt aagtttatgg ccatttatta tttgtatcgt tatatttaca 480  
 ggtatttttc tgactttaga agttccagtt attcgacatg ttcattttatc atccccatta 540  
 agtcttttta gaaagaaaca acagggagaa aaagaaccaa aaggtaatct tatacttgca 600  
 attttagcgt tagtagctat cgccatcgtt tatacaatgg ctcttacttc aggtaaagca 660  
 cctgcattag ctgttatcta tcgtttcttc tttgcagtac ttttagtaat tgctgggtact 720  
 tatctttttt atattagttt tatgacatgg tacttaaaaa gggtgcgtca aaacaagcat 780  
 tattattata aatctgagca ttttgtatca acttcgcaaa tgatttttcg aatgaagcaa 840  
 aatgcagtag ggtagcaag tatcacttta ttagctgtta tggctctagt tactattgct 900  
 acaacagtct cactctattc aaatacacia aatgttgta ccggactatt tccaaaatca 960  
 gtaagtttat caatagataa ttcaaaagggt gacgcgaaaa atatatttga agaaaagatt 1020  
 ttgaagaaac taggtaagtc atctaaggaa gctatcactt ataatcagac aatgatttcg 1080  
 atgccagtta gtcaatcaag tgacttaata tcacatcta 1119

<210> 198  
 <211> 373  
 <212> PRT  
 <213> Streptococcus agalactiae

<400> 198

Met	Asn	Asn	Met	Phe	Tyr	Leu	Lys	Ile	Ala	Trp	His	Asn	Leu	Lys	His
1				5					10					15	
Ser	Ile	Asp	Gln	Tyr	Ile	Pro	Phe	Leu	Leu	Ala	Ser	Leu	Leu	Leu	Tyr
			20					25					30		
Ser	Leu	Thr	Cys	Ser	Thr	Leu	Leu	Ile	Leu	Met	Ser	Ala	Val	Gly	Arg
			35				40					45			
Asp	Met	Gly	Thr	Ala	Ala	Thr	Val	Leu	Phe	Leu	Gly	Val	Ile	Val	Leu
	50					55					60				
Ser	Ile	Phe	Ala	Val	Val	Met	Glu	His	Tyr	Ser	Tyr	Asn	Ile	Leu	Met
65					70				75					80	
Lys	Gln	Arg	Ser	Ser	Glu	Phe	Gly	Leu	Tyr	Asn	Ile	Leu	Gly	Met	Asn
			85					90						95	
Lys	Arg	Gln	Val	Ala	Arg	Val	Ala	Ser	Leu	Glu	Leu	Phe	Ile	Ile	Tyr
			100					105						110	

Ile Phe Leu Ile Ser Ile Gly Ser Leu Phe Ser Ala Phe Phe Ala Lys  
 115 120 125  
 Phe Ile Tyr Leu Ile Phe Val Asn Ile Ile Asn Tyr His Ala Leu Asn  
 130 135 140  
 Leu Ser Leu Ser Leu Trp Pro Phe Ile Ile Cys Ile Val Ile Phe Thr  
 145 150 155 160  
 Gly Ile Phe Leu Thr Leu Glu Val Pro Val Ile Arg His Val His Leu  
 165 170 175  
 Ser Ser Pro Leu Ser Leu Phe Arg Lys Lys Gln Gln Gly Glu Lys Glu  
 180 185 190  
 Pro Lys Gly Asn Leu Ile Leu Ala Ile Leu Ala Leu Val Ala Ile Ala  
 195 200 205  
 Ile Ala Tyr Thr Met Ala Leu Thr Ser Gly Lys Ala Pro Ala Leu Ala  
 210 215 220  
 Val Ile Tyr Arg Phe Phe Phe Ala Val Leu Leu Val Ile Ala Gly Thr  
 225 230 235 240  
 Tyr Leu Phe Tyr Ile Ser Phe Met Thr Trp Tyr Leu Lys Arg Leu Arg  
 245 250 255  
 Gln Asn Lys His Tyr Tyr Tyr Lys Ser Glu His Phe Val Ser Thr Ser  
 260 265 270  
 Gln Met Ile Phe Arg Met Lys Gln Asn Ala Val Gly Leu Ala Ser Ile  
 275 280 285  
 Thr Leu Leu Ala Val Met Ala Leu Val Thr Ile Ala Thr Thr Val Ser  
 290 295 300  
 Leu Tyr Ser Asn Thr Gln Asn Val Val Thr Gly Leu Phe Pro Lys Ser  
 305 310 315 320  
 Val Ser Leu Ser Ile Asp Asn Ser Lys Gly Asp Ala Lys Asn Ile Phe  
 325 330 335  
 Glu Glu Lys Ile Leu Lys Lys Leu Gly Lys Ser Ser Lys Glu Ala Ile  
 340 345 350  
 Thr Tyr Asn Gln Thr Met Ile Ser Met Pro Val Ser Gln Ser Ser Asp  
 355 360 365  
 Leu Ile Ser His Leu  
 370

<210> 199  
 <211> 735  
 <212> DNA  
 <213> Streptococcus agalactiae



<400> 199  
atggttgagc caattatttc aatacaagga cttcataaaa gttttgggaa aaatgaggtt 60  
ttaaaggca ttgacttgga tattcatcaa ggagaagtgg tggttattat tggcccttct 120  
ggctctggta agtcaacatt tttagaaca atgaatctct tggaagtacc aacaaagga 180  
acagtgactt ttgaagggat tgatataaca gacaaaaaga atgatatttt taaaatgcgc 240  
gaaaaaatgg gcatggtttt tcaacagttc aatctatttc ccaatatgac tgtactagaa 300  
aatattactt taccacctat taagacaaag ggactttcta agcttgatgc tcagacaaaa 360  
gcatacgagc tacttgaaaa agttggactc aaagagaagg ctaatgctta tccagcaagc 420  
ttatctggag gacaacaaca acggattgct attgcaagag gtcttgcaat gaatcctgat 480  
gtccttcttt ttgatgaacc tacttcagct cttgatcctg aaatggtagg tgaagtcttg 540  
actgttatgc aagatttagc taaatctggg atgacgatgg ttattgtcac tcatgaaatg 600  
ggttttgcac gtgaagtagc ggatcgtgtc atttttatgg atgcagggat tattgttgag 660  
caagggaccc ctaagaaagt atttgagcag acaaaagaaa tccgcacaag agacttctta 720  
agtaaagtat tataa 735

<210> 200  
<211> 244  
<212> PRT  
<213> Streptococcus agalactiae

<400> 200

Met	Val	Glu	Pro	Ile	Ile	Ser	Ile	Gln	Gly	Leu	His	Lys	Ser	Phe	Gly	
1				5					10					15		
Lys	Asn	Glu	Val	Leu	Lys	Gly	Ile	Asp	Leu	Asp	Ile	His	Gln	Gly	Glu	
			20					25					30			
Val	Val	Val	Ile	Ile	Gly	Pro	Ser	Gly	Ser	Gly	Lys	Ser	Thr	Phe	Leu	
			35				40					45				
Arg	Thr	Met	Asn	Leu	Leu	Glu	Val	Pro	Thr	Lys	Gly	Thr	Val	Thr	Phe	
		50				55					60					
Glu	Gly	Ile	Asp	Ile	Thr	Asp	Lys	Lys	Asn	Asp	Ile	Phe	Lys	Met	Arg	
65				70					75					80		
Glu	Lys	Met	Gly	Met	Val	Phe	Gln	Gln	Phe	Asn	Leu	Phe	Pro	Asn	Met	
				85					90					95		
Thr	Val	Leu	Glu	Asn	Ile	Thr	Leu	Ser	Pro	Ile	Lys	Thr	Lys	Gly	Leu	
			100					105					110			
Ser	Lys	Leu	Asp	Ala	Gln	Thr	Lys	Ala	Tyr	Glu	Leu	Leu	Glu	Lys	Val	

115					120					125						
Gly	Leu	Lys	Glu	Lys	Ala	Asn	Ala	Tyr	Pro	Ala	Ser	Leu	Ser	Gly	Gly	
130					135					140						
Gln	Gln	Gln	Arg	Ile	Ala	Ile	Ala	Arg	Gly	Leu	Ala	Met	Asn	Pro	Asp	
145					150					155					160	
Val	Leu	Leu	Phe	Asp	Glu	Pro	Thr	Ser	Ala	Leu	Asp	Pro	Glu	Met	Val	
165					170					175						
Gly	Glu	Val	Leu	Thr	Val	Met	Gln	Asp	Leu	Ala	Lys	Ser	Gly	Met	Thr	
180					185					190						
Met	Val	Ile	Val	Thr	His	Glu	Met	Gly	Phe	Ala	Arg	Glu	Val	Ala	Asp	
195					200					205						
Arg	Val	Ile	Phe	Met	Asp	Ala	Gly	Ile	Ile	Val	Glu	Gln	Gly	Thr	Pro	
210					215					220						
Lys	Lys	Val	Phe	Glu	Gln	Thr	Lys	Glu	Ile	Arg	Thr	Arg	Asp	Phe	Leu	
225					230					235					240	
Ser Lys Val Leu																

<210> 201  
 <211> 348  
 <212> DNA  
 <213> Streptococcus agalactiae

<400> 201  
 atgtctcast atcaagagtg gttagaaaac gactcactcg gtaaagatat taagtcagat 60  
 ttagaagcta ttaaaggaga tgaatctgaa attcaggatc gtttttaciaa aacattagaa 120  
 tttggaacgg cgggattgag aggtaaactt ggagcaggaa ccaatcgtat gaatacttat 180  
 atggtgggga aagcagcaca agcattagct aatcgattat tgatcatggc cctgaagcta 240  
 ttgcacgtgg aattgcagtt agttatgatg tcccgttatc aatctaagga atttgcagaa 300  
 ttaacttggt ccattatggc agcaaattgt attaaagcct tatattta 348

<210> 202  
 <211> 122  
 <212> PRT  
 <213> Streptococcus agalactiae

<400> 202

Met	Ser	His	Met	Asn	Tyr	Lys	Glu	Ile	Tyr	Gln	Glu	Trp	Leu	Glu	Asn
1				5					10					15	
Asp	Ser	Leu	Gly	Lys	Asp	Ile	Lys	Ser	Asp	Leu	Glu	Ala	Ile	Lys	Gly
20				25				30							



tctggtaaaa	ctgaagcaag	tgttggcttt	ggtgcctcac	gagaaggtag	gacgaattcg	1020
agctcggtac	ccgggggatcc	tctagagtcg	acctgcaggc	atgcaagc		1068

Met 1	Gln	Pro	Val	Lys 5	Val	Asp	Glu	Pro	Ser 10	Val	Glu	Glu	Thr	Ile 15	Thr
Ile	Leu	Lys	Gly 20	Ile	Gln	Lys	Lys	Tyr 25	Glu	Asp	Tyr	His	His 30	Val	Lys
Tyr	Asn	Asn 35	Asp	Ala	Ile	Glu	Ala 40	Ala	Ala	Val	Leu	Ser 45	Asn	Arg	Tyr
Ile	Gln 50	Asp	Arg	Phe	Leu	Pro 55	Asp	Lys	Ala	Ile	Asp 60	Leu	Leu	Asp	Glu
Ala 65	Gly	Ser	Lys	Met 70	Asn	Leu	Thr	Leu	Asn 75	Phe	Val	Asp	Pro	Lys	Glu 80
Ile	Asp	Gln	Arg 85	Leu	Ile	Glu	Ala	Glu	Asn 90	Leu	Lys	Ala	Gln 95	Ala	Thr
Arg	Glu	Glu	Asp 100	Tyr	Glu	Arg	Ala	Ala 105	Tyr	Phe	Arg	Asp	Gln 110	Ile	Ala
Lys	Tyr	Lys 115	Glu	Met	Gln	Gln	Gln 120	Lys	Val	Asp	Asp	Gln 125	Asp	Thr	Pro
Ile 130	Ile	Thr	Glu	Lys	Thr	Ile 135	Glu	His	Ile	Ile 140	Glu	Glu	Lys	Thr	Asn
Ile 145	Pro	Val	Gly	Asp 150	Leu	Lys	Glu	Lys	Glu 155	Gln	Ser	Gln	Leu	Ile 160	Asn
Leu	Ala	Asp	Asp 165	Leu	Lys	Gln	His	Val	Ile 170	Gly	Gln	Asp	Asp	Ala 175	Val
Ile	Lys	Ile	Ala 180	Lys	Ala	Ile	Arg	Arg 185	Asn	Arg	Val	Gly	Leu 190	Gly	Ser
Pro	Asn	Arg 195	Pro	Ile	Gly	Ser	Phe 200	Leu	Phe	Val	Gly	Pro 205	Thr	Gly	Val
Gly	Lys 210	Thr	Glu	Leu	Ser	Lys 215	Gln	Leu	Ala	Ile 220	Glu	Leu	Phe	Gly	Ser
Ala 225	Asp	Ser	Met	Ile 230	Arg	Phe	Asp	Met	Ser	Glu 235	Tyr	Met	Glu	Lys	His 240

Ala Val Ala Lys Leu Val Gly Ala Pro Pro Gly Tyr Val Gly Tyr Glu  
245 250 255

Glu Ala Gly Gln Leu Thr Glu Lys Val Arg Arg Asn Pro Tyr Ser Leu  
260 265 270

Ile Leu Leu Asp Glu Ile Glu Lys Ala His Pro Asp Val Met His Met  
275 280 285

Phe Leu Gln Val Leu Asp Asp Gly Arg Leu Thr Asp Gly Gln Gly Arg  
290 295 300

Thr Val Ser Phe Lys Asp Thr Ile Ile Ile Met Thr Ser Asn Ala Gly  
305 310 315 320

Ser Gly Lys Thr Glu Ala Ser Val Gly Phe Gly Ala Ser Arg Glu Gly  
325 330 335

Arg Thr Asn Ser Ser Ser Val Pro Gly Asp Pro Leu Glu Ser Thr Cys  
340 345 350

Arg His Ala Ser  
355

<210> 205  
<211> 582  
<212> DNA  
<213> Streptococcus agalactiae

<400> 205  
atgagagggga aggttatttta cggcacaacc cttataggtc tttttctatt cttatttttc 60  
tatttttggga ttcctaagca tcacatcgag agaatacatc atcatcgtat aaagcaggta 120  
gatgcgaaga gtgatttaac aggatttaaa acccatttgc ccattatcag cattgatata 180  
aagcaacaag ttattcctct tgttacaaaa gaaggcggaa aatatgtcaa agctagggat 240  
aatattaatg ttgatatcga attacgggat tctccaagta gatcacatca tttatcagaa 300  
aagccgagaa ttaggacaaa agggttaata tcatatagag gaaattcctc tcgttacttt 360  
gataagaagt cattgaaagt taagtttgtt actaataagt taaaggaaaa gaagcatcga 420  
ttagcaggaa tgcctaaaga atcggagtgg gtattgcatg gtccctttct agacagaaca 480  
ttattaagaa attatctgag ttataatatt gctggtgaga ttatgcctat gcccacaaacg 540  
ttcgctactg tgagttattt gtcaatggtg agtatcaggg ag 582

<210> 206  
<211> 194  
<212> PRT  
<213> Streptococcus agalactiae

<400> 206



gactcgtcgc tcttttgtta cctggttatct ttatattagt gaatgtctat cggaaaaaat 420  
cagtcactgt cattgctaaa acgagaagtt tacttagtga tatcaacagt aaattatcag 480  
aaagtattga aggaattc 498

<210> 208  
<211> 165  
<212> PRT  
<213> Streptococcus agalactiae

<400> 208

Ser His Phe Ile Asp His Tyr Leu Thr Asn Val Asn Gln Thr Ala Val  
1 5 10 15  
Leu Ile Leu Val Gly Tyr Tyr Ser Met Tyr Val Leu Gln Thr Leu Ile  
20 25 30  
Gln Tyr Phe Gly Asn Leu Phe Phe Ala Arg Val Ser Tyr Ser Ile Val  
35 40 45  
Arg Asp Ile Arg Arg Asp Ala Phe Ala Asn Met Glu Arg Leu Gly Met  
50 55 60  
Ser Tyr Phe Asp Arg Thr Pro Ala Gly Ser Ile Val Ser Arg Ile Thr  
65 70 75 80  
Asn Asp Thr Glu Ala Ile Ser Asp Met Phe Ser Gly Ile Leu Ser Ser  
85 90 95  
Phe Ile Ser Ala Ile Phe Ile Phe Thr Val Thr Leu Tyr Thr Met Leu  
100 105 110  
Met Leu Asp Ile Lys Leu Thr Gly Leu Val Ala Leu Leu Leu Pro Val  
115 120 125  
Ile Phe Ile Leu Val Asn Val Tyr Arg Lys Lys Ser Val Thr Val Ile  
130 135 140  
Ala Lys Thr Arg Ser Leu Leu Ser Asp Ile Asn Ser Lys Leu Ser Glu  
145 150 155 160  
Ser Ile Glu Gly Ile  
165

<210> 209  
<211> 681  
<212> DNA  
<213> Streptococcus agalactiae

<400> 209

atgtaccata ttgaattaaa aaaggaagct ttactaccaa gagaacgcct agttgattta 60  
ggcgcagata gattgagtaa tcaggagtta ttagccattc tcttacgtac aggtattaaa 120

gaaaaacctg ttcttgaaat ttcaacgcaa attttagaaa acataagcag tttagcagat 180  
 tttggtcaat tatecttaca ggagttgcaa tccattaaag gaatcgggtca ggttaaattcc 240  
 gtcgaaataa aagctatgct agaactagca aaacggattc acaaagctga atatgatcgt 300  
 aaagagcaaa ttttaagtag tgaacaatta gcgaggaaaa tgatgctcga attaggggat 360  
 aaaaaacaag aacatttagt agctatttat atggatacac aaaatcgtat tatcgaacag 420  
 agaactattt ttattggtac tgtacgtcgt tcagtagcag agccaagaga aattctacat 480  
 tatgcttgta aaaacatggc aacttctttg attattatac ataatcatcc ctcagggttct 540  
 ccaaatecca gtgaaagtga tttaagtttc actaaaaaaaa taaaacgatc atgtgatcat 600  
 ctgggaattg tctgcctaga tcacatcatc gttggaaaaa ataaatatta tagttttcga 660  
 gaagaagcag atattttata a 681

<210> 210  
 <211> 226  
 <212> PRT  
 <213> Streptococcus agalactiae

<400> 210

Met Tyr His Ile Glu Leu Lys Lys Glu Ala Leu Leu Pro Arg Glu Arg  
 1 5 10 15  
 Leu Val Asp Leu Gly Ala Asp Arg Leu Ser Asn Gln Glu Leu Leu Ala  
 20 25 30  
 Ile Leu Leu Arg Thr Gly Ile Lys Glu Lys Pro Val Leu Glu Ile Ser  
 35 40 45  
 Thr Gln Ile Leu Glu Asn Ile Ser Ser Leu Ala Asp Phe Gly Gln Leu  
 50 55 60  
 Ser Leu Gln Glu Leu Gln Ser Ile Lys Gly Ile Gly Gln Val Lys Ser  
 65 70 75 80  
 Val Glu Ile Lys Ala Met Leu Glu Leu Ala Lys Arg Ile His Lys Ala  
 85 90 95  
 Glu Tyr Asp Arg Lys Glu Gln Ile Leu Ser Ser Glu Gln Leu Ala Arg  
 100 105 110  
 Lys Met Met Leu Glu Leu Gly Asp Lys Lys Gln Glu His Leu Val Ala  
 115 120 125  
 Ile Tyr Met Asp Thr Gln Asn Arg Ile Ile Glu Gln Arg Thr Ile Phe  
 130 135 140  
 Ile Gly Thr Val Arg Arg Ser Val Ala Glu Pro Arg Glu Ile Leu His



145                      150                      155                      160  
 Tyr Ala Cys Lys Asn Met Ala Thr Ser Leu Ile Ile Ile His Asn His  
                                  165                      170                      175  
 Pro Ser Gly Ser Pro Asn Pro Ser Glu Ser Asp Leu Ser Phe Thr Lys  
                                  180                      185                      190  
 Lys Ile Lys Arg Ser Cys Asp His Leu Gly Ile Val Cys Leu Asp His  
                                  195                      200                      205  
 Ile Ile Val Gly Lys Asn Lys Tyr Tyr Ser Phe Arg Glu Glu Ala Asp  
                                  210                      215                      220

Ile Leu  
225

<210> 211  
 <211> 579  
 <212> DNA  
 <213> Streptococcus agalactiae

<400> 211  
 tgggttaaaag tagtgatagc ttgtattcca tctatttttaa ttgctttacc atttgataat 60  
 tgggtttgaag ctcatTTTTAA tttcatgatt ccgattgcaa tagccctaatt cttttatgggt 120  
 tttgtcttca tatggggttga aaaacgtaat gcacacctca aaccacaggt aaccgaattg 180  
 gcaagtatgt cttacaagac agctttcttg attggatggt tccagggttct cagtattggt 240  
 ccgggaacca gtcgttctgg agctactatt ttaggagcaa ttattattgg aactagtcgt 300  
 tcggtcgctg ctgactttac tttcttcctt gccatcccaa ctatgtttgg ttatagtgga 360  
 cttaaggcgg ttaaataattt tttagatgggt aacgtcttga gtttagacca atctttaata 420  
 cttttagtag caagtctgac agctttcgta gttagtttat atgttattcg tttcttgaca 480  
 gactatgtca aacgacacga tttcaccatc tttggtaagt atcgtatagt cttaggaagt 540  
 ttactcatcc tctactgggtt agttgttcat ttattctaa 579

<210> 212  
 <211> 192  
 <212> PRT  
 <213> Streptococcus agalactiae

<400> 212

Trp Leu Lys Val Val Ile Ala Cys Ile Pro Ser Ile Leu Ile Ala Leu  
 1                      5                      10                      15  
 Pro Phe Asp Asn Trp Phe Glu Ala His Phe Asn Phe Met Ile Pro Ile  
                                  20                      25                      30

Ala Ile Ala Leu Ile Phe Tyr Gly Phe Val Phe Ile Trp Val Glu Lys  
35 40 45

Arg Asn Ala His Leu Lys Pro Gln Val Thr Glu Leu Ala Ser Met Ser  
50 55 60

Tyr Lys Thr Ala Phe Leu Ile Gly Cys Phe Gln Val Leu Ser Ile Val  
65 70 75 80

Pro Gly Thr Ser Arg Ser Gly Ala Thr Ile Leu Gly Ala Ile Ile Ile  
85 90 95

Gly Thr Ser Arg Ser Val Ala Ala Asp Phe Thr Phe Phe Leu Ala Ile  
100 105 110

Pro Thr Met Phe Gly Tyr Ser Gly Leu Lys Ala Val Lys Tyr Phe Leu  
115 120 125

Asp Gly Asn Val Leu Ser Leu Asp Gln Ser Leu Ile Leu Leu Val Ala  
130 135 140

Ser Leu Thr Ala Phe Val Val Ser Leu Tyr Val Ile Arg Phe Leu Thr  
145 150 155 160

Asp Tyr Val Lys Arg His Asp Phe Thr Ile Phe Gly Lys Tyr Arg Ile  
165 170 175

Val Leu Gly Ser Leu Leu Ile Leu Tyr Trp Leu Val Val His Leu Phe  
180 185 190

<210> 213

<211> 547

<212> DNA

<213> Streptococcus agalactiae

<400> 213

atggaaatga aacaaatcag tgaaacaaca ctgaaaatta caattagtat ggaagattta 60

gaagatcgtg gtatggagct gaaagatttc ctaatccctc aggagaagac tgaggaattt 120

ttctattctg tcatggatga attagacttg ccagaaaact ttaaaaatag tggatatgta 180

agtttttcgag taacacctaa aaaagatcgc attgatgttt ttgttacaaa gtctgaatta 240

agtaaagatt taaatttaga agaattagca gatttggttg acatttcaaa aatgtctcca 300

gaagactttt ttaaaacctt ggaacaatcg atgttggaag aaggggatac ggatgcccat 360

gccaaattag cagaaattga aaatatgatg gataaagcaa ctcaagaagt agttgaggaa 420

aatgtttctg aagaacaacc tgaaaaggaa gtagaaacga ttggatatgt tcactatgtc 480

tttgattttg ataattatga agctgtagtt cgattttcac aaacgattga ttttccaata 540

gaagctt 547

<210> 214  
 <211> 182  
 <212> PRT  
 <213> Streptococcus agalactiae

<400> 214

Met	Glu	Met	Lys	Gln	Ile	Ser	Glu	Thr	Thr	Leu	Lys	Ile	Thr	Ile	Ser
1				5					10					15	
Met	Glu	Asp	Leu	Glu	Asp	Arg	Gly	Met	Glu	Leu	Lys	Asp	Phe	Leu	Ile
			20				25						30		
Pro	Gln	Glu	Lys	Thr	Glu	Glu	Phe	Phe	Tyr	Ser	Val	Met	Asp	Glu	Leu
			35				40					45			
Asp	Leu	Pro	Glu	Asn	Phe	Lys	Asn	Ser	Gly	Met	Leu	Ser	Phe	Arg	Val
	50					55					60				
Thr	Pro	Lys	Lys	Asp	Arg	Ile	Asp	Val	Phe	Val	Thr	Lys	Ser	Glu	Leu
65					70				75					80	
Ser	Lys	Asp	Leu	Asn	Leu	Glu	Glu	Leu	Ala	Asp	Leu	Gly	Asp	Ile	Ser
			85					90						95	
Lys	Met	Ser	Pro	Glu	Asp	Phe	Phe	Lys	Thr	Leu	Glu	Gln	Ser	Met	Leu
			100					105					110		
Glu	Lys	Gly	Asp	Thr	Asp	Ala	His	Ala	Lys	Leu	Ala	Glu	Ile	Glu	Asn
		115					120					125			
Met	Met	Asp	Lys	Ala	Thr	Gln	Glu	Val	Val	Glu	Glu	Asn	Val	Ser	Glu
	130					135					140				
Glu	Gln	Pro	Glu	Lys	Glu	Val	Glu	Thr	Ile	Gly	Tyr	Val	His	Tyr	Val
145					150					155					160
Phe	Asp	Phe	Asp	Asn	Ile	Glu	Ala	Val	Val	Arg	Phe	Ser	Gln	Thr	Ile
			165					170						175	
Asp	Phe	Pro	Ile	Glu	Ala										
			180												

<210> 215  
 <211> 447  
 <212> DNA  
 <213> Streptococcus agalactiae

<400> 215

ggaaaccaac	ggccagtaca	atcggtcaagg	gtagattatc	ctaaacgtag	tcgtgccaaag	60
attgtagaag	tttatttttag	acaagcttct	actactgatt	attctggtgt	ttacaaaggt	120
tactatattg	actttgaagc	caaagaaacc	cggcagaaaa	ctgctatgcc	tatgaaaaat	180
tttcatgctc	accaaataga	gcacatggca	aatgtattac	agcaaaaagg	gatttgcttt	240

gtcttgettc atttttccac acttaaggaa acctatctac tccctgctaa tgagttaatt 300  
 tcattttatc agattgataa aggcaataaa tcaatgccta ttgattatat cagaaaaaat 360  
 ggatttttcg taaaggagag tgcctttcct caagtcctt acttagatat tattgaagaa 420  
 aaattattag gcggtgatta caattaa 447

<210> 216  
 <211> 148  
 <212> PRT  
 <213> Streptococcus agalactiae

<400> 216

Gly Asn Gln Arg Pro Val Gln Ser Ser Arg Val Asp Tyr Pro Lys Arg  
 1 5 10 15  
 Ser Arg Ala Lys Ile Val Glu Val Tyr Phe Arg Gln Ala Ser Thr Thr  
 20 25 30  
 Asp Tyr Ser Gly Val Tyr Lys Gly Tyr Tyr Ile Asp Phe Glu Ala Lys  
 35 40 45  
 Glu Thr Arg Gln Lys Thr Ala Met Pro Met Lys Asn Phe His Ala His  
 50 55 60  
 Gln Ile Glu His Met Ala Asn Val Leu Gln Gln Lys Gly Ile Cys Phe  
 65 70 75 80  
 Val Leu Leu His Phe Ser Thr Leu Lys Glu Thr Tyr Leu Leu Pro Ala  
 85 90 95  
 Asn Glu Leu Ile Ser Phe Tyr Gln Ile Asp Lys Gly Asn Lys Ser Met  
 100 105 110  
 Pro Ile Asp Tyr Ile Arg Lys Asn Gly Phe Phe Val Lys Glu Ser Ala  
 115 120 125  
 Phe Pro Gln Val Pro Tyr Leu Asp Ile Ile Glu Glu Lys Leu Leu Gly  
 130 135 140  
 Gly Asp Tyr Asn  
 145

<210> 217  
 <211> 433  
 <212> DNA  
 <213> Streptococcus agalactiae

<400> 217

ggatcctaaa aacgctaagg tttatcaaaa aaatgctgat caatttagtg acaaggcaat 60  
 ggctattgca gagaagtata agccaaaatt taaagctgca aagtctaaat actttgtgac 120  
 ttcacataca gcatttctcat acttagctaa gcgatacgga ttgactcagt taggtattgc 180

aggtgtctca accgagcaag aacctagtgc taaaaaatta gccgaaattc aggagtttgt 240  
 gaaaacatat aagggttaaga ctatTTTTgt tgaagaagga gtctcaccta aattagctca 300  
 agcagtagct tcagctactc gagttaaaat tgcaagttta agtccttttag aagcagttcc 360  
 caaaaacaat aaagattact tagaaaattt ggaaactaat ctttaaggtag ttgtcaaac 420  
 gttaaataca tag 433

<210> 218  
 <211> 143  
 <212> PRT  
 <213> Streptococcus agalactiae  
  
 <400> 218

Asp Pro Lys Asn Ala Lys Val Tyr Gln Lys Asn Ala Asp Gln Phe Ser  
 1 5 10 15  
 Asp Lys Ala Met Ala Ile Ala Glu Lys Tyr Lys Pro Lys Phe Lys Ala  
 20 25 30  
 Ala Lys Ser Lys Tyr Phe Val Thr Ser His Thr Ala Phe Ser Tyr Leu  
 35 40 45  
 Ala Lys Arg Tyr Gly Leu Thr Gln Leu Gly Ile Ala Gly Val Ser Thr  
 50 55 60  
 Glu Gln Glu Pro Ser Ala Lys Lys Leu Ala Glu Ile Gln Glu Phe Val  
 65 70 75 80  
 Lys Thr Tyr Lys Val Lys Thr Ile Phe Val Glu Glu Gly Val Ser Pro  
 85 90 95  
 Lys Leu Ala Gln Ala Val Ala Ser Ala Thr Arg Val Lys Ile Ala Ser  
 100 105 110  
 Leu Ser Pro Leu Glu Ala Val Pro Lys Asn Asn Lys Asp Tyr Leu Glu  
 115 120 125  
 Asn Leu Glu Thr Asn Leu Lys Val Leu Val Lys Ser Leu Asn Gln  
 130 135 140

<210> 219  
 <211> 717  
 <212> DNA  
 <213> Streptococcus agalactiae

<400> 219  
 atgaaaaaag tcatcgattt aaaaaaacta caaaaagcat acgcctcaga aactgtttta 60  
 aataatatta atttggaggt gtttaaagga gaaataattg gattaatagg accctctgga 120  
 gcagggaaat ctaccttgat taaaactatg cttggcatgg aaaaagcaga taagggaaca 180

gctcttggtc ttgatactca aatgccagat cgtaatat<sup>1</sup>ttt taaatcaa<sup>1</sup>at tggctatatg 240  
 gctcaatctg atgccttaca cgagtcttta actggcttag aaaatttatt attctttgga 300  
 aaaatgaaag gtattcaaaa aactgaatta aaacagcaga taactcatat ttctaaagta 360  
 gtagatctag aaaaccaact tgataaattt gtctcaggtt actcagaagg tatgaaaaga 420  
 cggttttctc tagccatcgc cctacttgga aacccacag ttttaatcct agatgaacct 480  
 accgttgga<sup>2</sup> ttgatccatc cttgaggaga aaaatctggc aagagcta<sup>2</sup>at taatattaag 540  
 gatgaaggac gttctatctt tattacaacc cacgttatgg atgaagcaga attaacaagt 600  
 aaggttgcac tactattacg tggaaacatt attgcctttg atactccatt acatttaaaa 660  
 aaacaattta atgtgagtac tattgaggaa gttttcttaa aagctgaagg agaataa 717

<210> 220  
 <211> 238  
 <212> PRT  
 <213> Streptococcus agalactiae

<400> 220

Met	Lys	Lys	Val	Ile	Asp	Leu	Lys	Lys	Leu	Gln	Lys	Ala	Tyr	Ala	Ser	1	5	10	15
Glu	Thr	Val	Leu	Asn	Asn	Ile	Asn	Leu	Glu	Val	Phe	Lys	Gly	Glu	Ile	20	25	30	
Ile	Gly	Leu	Ile	Gly	Pro	Ser	Gly	Ala	Gly	Lys	Ser	Thr	Leu	Ile	Lys	35	40	45	
Thr	Met	Leu	Gly	Met	Glu	Lys	Ala	Asp	Lys	Gly	Thr	Ala	Leu	Val	Leu	50	55	60	
Asp	Thr	Gln	Met	Pro	Asp	Arg	Asn	Ile	Leu	Asn	Gln	Ile	Gly	Tyr	Met	65	70	75	80
Ala	Gln	Ser	Asp	Ala	Leu	His	Glu	Ser	Leu	Thr	Gly	Leu	Glu	Asn	Leu	85	90	95	
Leu	Phe	Phe	Gly	Lys	Met	Lys	Gly	Ile	Gln	Lys	Thr	Glu	Leu	Lys	Gln	100	105	110	
Gln	Ile	Thr	His	Ile	Ser	Lys	Val	Val	Asp	Leu	Glu	Asn	Gln	Leu	Asp	115	120	125	
Lys	Phe	Val	Ser	Gly	Tyr	Ser	Glu	Gly	Met	Lys	Arg	Arg	Leu	Ser	Leu	130	135	140	
Ala	Ile	Ala	Leu	Leu	Gly	Asn	Pro	Thr	Val	Leu	Ile	Leu	Asp	Glu	Pro	145	150	155	160

Thr Val Gly Ile Asp Pro Ser Leu Arg Arg Lys Ile Trp Gln Glu Leu  
165 170 175

Ile Asn Ile Lys Asp Glu Gly Arg Ser Ile Phe Ile Thr Thr His Val  
180 185 190

Met Asp Glu Ala Glu Leu Thr Ser Lys Val Ala Leu Leu Leu Arg Gly  
195 200 205

Asn Ile Ile Ala Phe Asp Thr Pro Leu His Leu Lys Lys Gln Phe Asn  
210 215 220

Val Ser Thr Ile Glu Glu Val Phe Leu Lys Ala Glu Gly Glu  
225 230 235

<210> 221

<211> 591

<212> DNA

<213> Streptococcus agalactiae

<400> 221

atggtacaaa tgatacatga tatgattaaa acaattgagc attttgctga gacacaagct 60

gattttccag tgtatgatat tttaggggaa gtccatactt atggacaact taaagtagac 120

tctgactctc tagctgctca tattgatagc ctaggccttg ttgaaaaatc acctgtctta 180

gtattcggtg gtcaagaata tgaaatggtg gcgacatttg ttgctttaac aaagtcaggg 240

catgcttata taccggttga ccaacactct gctttggata gaatacaggc tattatgaca 300

gttgctcaac caagccttat catttcaatt ggtgaatttc ctcttgaagt tgataatgtc 360

ccaatcctag acgtttctca agtttcagct atttttgaag aaaagactcc ttatgaggtta 420

acacattctg ttaaagggtga tgataattac tatattattt tcacttcagg gactactggt 480

ttacccaaaag gtgtgcaaatt ttcacatgac aatttattga gctttacaaa ttggatgatt 540

tctgatgatg agttttcagt tcttgaaaga cgcgaaatgt tggctcaacc c 591

<210> 222

<211> 197

<212> PRT

<213> Streptococcus agalactiae

<400> 222

Met Val Gln Met Ile His Asp Met Ile Lys Thr Ile Glu His Phe Ala  
1 5 10 15

Glu Thr Gln Ala Asp Phe Pro Val Tyr Asp Ile Leu Gly Glu Val His  
20 25 30

Thr Tyr Gly Gln Leu Lys Val Asp Ser Asp Ser Leu Ala Ala His Ile  
35 40 45

Asp Ser Leu Gly Leu Val Glu Lys Ser Pro Val Leu Val Phe Gly Gly  
 50 55 60  
 Gln Glu Tyr Glu Met Leu Ala Thr Phe Val Ala Leu Thr Lys Ser Gly  
 65 70 75 80  
 His Ala Tyr Ile Pro Val Asp Gln His Ser Ala Leu Asp Arg Ile Gln  
 85 90 95  
 Ala Ile Met Thr Val Ala Gln Pro Ser Leu Ile Ile Ser Ile Gly Glu  
 100 105 110  
 Phe Pro Leu Glu Val Asp Asn Val Pro Ile Leu Asp Val Ser Gln Val  
 115 120 125  
 Ser Ala Ile Phe Glu Glu Lys Thr Pro Tyr Glu Val Thr His Ser Val  
 130 135 140  
 Lys Gly Asp Asp Asn Tyr Tyr Ile Ile Phe Thr Ser Gly Thr Thr Gly  
 145 150 155 160  
 Leu Pro Lys Gly Val Gln Ile Ser His Asp Asn Leu Leu Ser Phe Thr  
 165 170 175  
 Asn Trp Met Ile Ser Asp Asp Glu Phe Ser Val Pro Glu Arg Pro Gln  
 180 185 190  
 Met Leu Ala Gln Pro  
 195

<210> 223

<211> 1179

<212> DNA

<213> Streptococcus agalactiae

<400> 223

atggaaaatc atcgttatga agatgaaggt aaattccagc gtaagatgac cagtcgtcat 60

ctctttatgt tatcgctagg tgggtgtatc gggactgggc ttttcttgag ttcaggttat 120

accattgcac aggctgggtcc gcttggagct gtgctgtctt atttgattgg tgccgttgtg 180

gtttatttgg tcatgctatc acttggggaa ttggcggttg ccatgccggg gacgggggtca 240

ttccacactt atgccactaa gtttatcagt cctggaacag gttttactgt tgcttggcta 300

tattggattt gttggacggg cgccttgggg actgaatttt taggtgctgc catgctgatg 360

cagcgctggg tcccaaagt ggcggcttgg gcatttgctt ccttttttgc ccttgtgatt 420

tttggtttaa atgctcttag cgtacgcttt tttgcagaag cagagtcttt cttctcaagt 480

attaagggtta ttgctatcat tatctttatt atcttgggct taggtgctat gtttgggtcta 540

gtttcctttg aaggtcagca caaggctatt ctcttcactc atctgactgc caatgggtgcc 600



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tttccaaatg gtatcggtgc agttgtctca gtcatgttgg ctgttaacta tgccttctct 660
gggtactgagt taattggtat tgcggctggt gaaacggata atcccaaaga agctgtacca 720
agggctatta aaacgacaat cggtcgcttg gttgttttct ttgtactgac aattgttgtc 780
ctagcttcgc tattgccaat gaaagaggca ggcgtatcca cagcaccatt cgttgatgtc 840
tttgacaaga tgggaatccc ttttacggcg gatatcatga acttcggtat cttgacagcc 900
atcctgtctg ctggtaactc aggtctctac gcatacaagcc gtatgctctg gtccttggcc 960
aatgaaggta tgttgtcaaa atctgttgtg aaaatcaata aacacggtgt cccaatgcgt 1020
gctcttctct tgtcaatggc aggagcagtg ctgtcgctct tttcaagtat ttacgctgca 1080
gacacagttt atctagcctt gggttcaatc gcgggctttg ctgttggtgt cgtatggcta 1140
gccattccag tcgcacaaat caatttcgc aaggaattc 1179

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<210> 224
<211> 393
<212> PRT
<213> Streptococcus agalactiae

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<400> 224

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Met Glu Asn His Arg Tyr Glu Asp Glu Gly Lys Phe Gln Arg Lys Met
1          5          10          15

Thr Ser Arg His Leu Phe Met Leu Ser Leu Gly Gly Val Ile Gly Thr
          20          25          30

Gly Leu Phe Leu Ser Ser Gly Tyr Thr Ile Ala Gln Ala Gly Pro Leu
          35          40          45

Gly Ala Val Leu Ser Tyr Leu Ile Gly Ala Val Val Val Tyr Leu Val
          50          55          60

Met Leu Ser Leu Gly Glu Leu Ala Val Ala Met Pro Val Thr Gly Ser
65          70          75          80

Phe His Thr Tyr Ala Thr Lys Phe Ile Ser Pro Gly Thr Gly Phe Thr
          85          90          95

Val Ala Trp Leu Tyr Trp Ile Cys Trp Thr Val Ala Leu Gly Thr Glu
          100          105          110

Phe Leu Gly Ala Ala Met Leu Met Gln Arg Trp Phe Pro Asn Val Pro
          115          120          125

Ala Trp Ala Phe Ala Ser Phe Phe Ala Leu Val Ile Phe Gly Leu Asn
          130          135          140

Ala Leu Ser Val Arg Phe Phe Ala Glu Ala Glu Ser Phe Phe Ser Ser
145          150          155          160

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Ile Lys Val Ile Ala Ile Ile Ile Phe Ile Ile Leu Gly Leu Gly Ala  
 165 170 175  
 Met Phe Gly Leu Val Ser Phe Glu Gly Gln His Lys Ala Ile Leu Phe  
 180 185 190  
 Thr His Leu Thr Ala Asn Gly Ala Phe Pro Asn Gly Ile Val Ala Val  
 195 200 205  
 Val Ser Val Met Leu Ala Val Asn Tyr Ala Phe Ser Gly Thr Glu Leu  
 210 215 220  
 Ile Gly Ile Ala Ala Gly Glu Thr Asp Asn Pro Lys Glu Ala Val Pro  
 225 230 235 240  
 Arg Ala Ile Lys Thr Thr Ile Gly Arg Leu Val Val Phe Phe Val Leu  
 245 250 255  
 Thr Ile Val Val Leu Ala Ser Leu Leu Pro Met Lys Glu Ala Gly Val  
 260 265 270  
 Ser Thr Ala Pro Phe Val Asp Val Phe Asp Lys Met Gly Ile Pro Phe  
 275 280 285  
 Thr Ala Asp Ile Met Asn Phe Val Ile Leu Thr Ala Ile Leu Ser Ala  
 290 295 300  
 Gly Asn Ser Gly Leu Tyr Ala Ser Ser Arg Met Leu Trp Ser Leu Ala  
 305 310 315 320  
 Asn Glu Gly Met Leu Ser Lys Ser Val Val Lys Ile Asn Lys His Gly  
 325 330 335  
 Val Pro Met Arg Ala Leu Leu Leu Ser Met Ala Gly Ala Val Leu Ser  
 340 345 350  
 Leu Phe Ser Ser Ile Tyr Ala Ala Asp Thr Val Tyr Leu Ala Leu Val  
 355 360 365  
 Ser Ile Ala Gly Phe Ala Val Val Val Val Trp Leu Ala Ile Pro Val  
 370 375 380  
 Ala Gln Ile Asn Phe Arg Lys Glu Phe  
 385 390

<210> 225

<211> 636

<212> DNA

<213> Streptococcus agalactiae

<400> 225

tcagaaaatg cagaggcagc aacggttgcc acaaacttgg ttaccaaagg agctaattgtc 60

attatcggac cagcaacatc ggggtgcagct gcatcttcaa ctccaaaagt aaatgcagca 120

gcagttccaa tgattgcacc tgctgcgaca caagacaatt tagtctatgg ttctgatgga 180

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aaaaccttaa atcagtatctt cttccgagct acttttgtcg ataattatca aggaaagcta 240
ttgtctcagt atgctacaga caaccttaaa gctaaaaaag ttgttctatt ttatgataat 300
tcatcagatt actcaaaggg ggtagcaaaa tcatttaagg aaagttatag tggaaaaatt 360
gttgatagta tgacattctc cgctgggtgat actgatttcc aagcgtcatt gactaagttg 420
aaagggaaag aatatgatgc tatttgtgatg ccaggttact ataccgagac aggattaata 480
gttaagcaag cgcgtgattt aggtatctct aaaccggttc ttgggcctga tggttttgat 540
agtccgaaat ttgtgcaatc ggcaacacct gtaggagctt caaacgttta ttatttgaca 600
ggtttccacta cacaaggatc aaccaaagct aaagct 636

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<210> 226
<211> 212
<212> PRT
<213> Streptococcus agalactiae

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<400> 226

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Ser Glu Asn Ala Glu Ala Ala Thr Val Ala Thr Asn Leu Val Thr Lys
1          5          10          15

Gly Ala Asn Val Ile Ile Gly Pro Ala Thr Ser Gly Ala Ala Ala Ser
          20          25          30

Ser Thr Pro Lys Val Asn Ala Ala Ala Val Pro Met Ile Ala Pro Ala
          35          40          45

Ala Thr Gln Asp Asn Leu Val Tyr Gly Ser Asp Gly Lys Thr Leu Asn
          50          55          60

Gln Tyr Phe Phe Arg Ala Thr Phe Val Asp Asn Tyr Gln Gly Lys Leu
65          70          75          80

Leu Ser Gln Tyr Ala Thr Asp Asn Leu Lys Ala Lys Lys Val Val Leu
          85          90          95

Phe Tyr Asp Asn Ser Ser Asp Tyr Ser Lys Gly Val Ala Lys Ser Phe
          100          105          110

Lys Glu Ser Tyr Ser Gly Lys Ile Val Asp Ser Met Thr Phe Ser Ala
          115          120          125

Gly Asp Thr Asp Phe Gln Ala Ser Leu Thr Lys Leu Lys Gly Lys Glu
          130          135          140

Tyr Asp Ala Ile Val Met Pro Gly Tyr Tyr Thr Glu Thr Gly Leu Ile
145          150          155          160

Val Lys Gln Ala Arg Asp Leu Gly Ile Ser Lys Pro Val Leu Gly Pro
          165          170          175

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Asp Gly Phe Asp Ser Pro Lys Phe Val Gln Ser Ala Thr Pro Val Gly  
 180 185 190

Ala Ser Asn Val Tyr Tyr Leu Thr Gly Phe Thr Thr Gln Gly Ser Thr  
 195 200 205

Lys Ala Lys Ala  
 210

<210> 227  
 <211> 270  
 <212> DNA  
 <213> Streptococcus agalactiae

<400> 227  
 ttgggactta aagaccatgc tttagtctat ccattttcat tatctggggg gcaaaagcaa 60  
 cgtgtcgcac tagctcgtgc gatgatgatt gatccacaga ttattggtta tgatgagcca 120  
 actagcgtc ttgatccaga gttgcgtcaa gaagtagaaa aactaatttt acaaaataga 180  
 gaaacaggta tgacacaaat tgtagtaaca catgatcttc aatttgctga aagtatatct 240  
 gatacgattc tcaaaattaa tcctaagtag 270

<210> 228  
 <211> 89  
 <212> PRT  
 <213> Streptococcus agalactiae

<400> 228

Met Gly Leu Lys Asp His Ala Leu Val Tyr Pro Phe Ser Leu Ser Gly  
 1 5 10 15

Gly Gln Lys Gln Arg Val Ala Leu Ala Arg Ala Met Met Ile Asp Pro  
 20 25 30

Gln Ile Ile Gly Tyr Asp Glu Pro Thr Ser Ala Leu Asp Pro Glu Leu  
 35 40 45

Arg Gln Glu Val Glu Lys Leu Ile Leu Gln Asn Arg Glu Thr Gly Met  
 50 55 60

Thr Gln Ile Val Val Thr His Asp Leu Gln Phe Ala Glu Ser Ile Ser  
 65 70 75 80

Asp Thr Ile Leu Lys Ile Asn Pro Lys  
 85

<210> 229  
 <211> 204  
 <212> DNA  
 <213> Streptococcus agalactiae

<400> 229  
atgactaata tctcagatgt tccaaaagct attagaacac aggcacagta tgttctcttg 60  
ggaatgagag ttatggatca gtcggtatta ccgaaaacat ataattcaaa agaaccttat 120  
ttgaaaccag atatgattta tattcatgat agaagacaag agacaatgct taaaatcact 180  
caagaaatag aaatggagca ttga 204

<210> 230  
<211> 67  
<212> PRT  
<213> Streptococcus agalactiae

<400> 230  
Met Thr Asn Ile Ser Asp Val Pro Lys Ala Ile Arg Thr Gln Ala Gln  
1 5 10 15  
Tyr Val Leu Leu Gly Met Arg Val Met Asp Gln Ser Val Leu Pro Lys  
20 25 30  
Thr Tyr Asn Ser Lys Glu Pro Tyr Leu Lys Pro Asp Met Ile Tyr Ile  
35 40 45  
His Asp Arg Arg Gln Glu Thr Met Leu Lys Ile Thr Gln Glu Ile Glu  
50 55 60  
Met Glu His  
65

<210> 231  
<211> 1411  
<212> DNA  
<213> Streptococcus agalactiae

<400> 231  
aagcttgcat gcctgcaggt cgactctaga ggatcttggg gaatataaat ttggatttca 60  
tgacgatgta aagccaattt attctacggg aaaagggtcta aatgaggctg ttattcgtga 120  
gttatctgca gctaaggggtg aacctgagtg gatgttggac tttcgtctaa aatccttgga 180  
aacgtttaat aaaatgccga tgcagacctg gggagcagat ttatcagata ttgattttga 240  
tgatattatt tattatcaaa aagcatctga taaacctgcg cgtgattggg atgatgttcc 300  
agaaaaaatc aaagaaactt ttgaaagaat tgggattcca gaagctgaaa gagcctatct 360  
tgcaggagca tcagcacaat atgaatcaga agtagtttat cacaatatga aagaagaata 420  
tgataagctg ggtattgbbb ttacggatac tgactctgca cttaaagagt acccagagct 480  
attcaaaaaa ttttttgcta aacttgctcc tccaacagat aataaattag ctgctctgaa 540  
ctctgctgta tggtcaggtg gaacatttat ttatgttccct aaaggtgtta aggtggatat 600

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tccacttcaa acttacttcc gtattaataa tgaaaatact ggacaatttg aacgtactct      660
cattattggt gatgagggag caagtgttca ctatgttgaa ggttgtagcg ccccaactta      720
ttcttcaaat agtttacatg cagctatagt tgaaatTTTT gcacttgatg gagcttatat      780
gcgctatacg actattcaaa attggtccga taatgtctat aatttagtga caaaacgtgc      840
taccgctaaa aaagatgcaa cagttgagtg gatagatgga aatctaggag ctaaaacaac      900
aatgaaatac ccatcggttt accttgatgg tgaaggagca cgtggcacga tgttgtctat      960
tgcttttgca aacaaaggac aacaccaaga tacgggtgca aagatgattc ataatgcccc     1020
ccatactagt tcatccattg tctctaaatc aattgctaag ggtgggggaa aagttgatta     1080
tcgagggtcaa gtgacattta ataaagattc caaaaaatca gtgtcacata tagaatgtga     1140
caccatattg atggatgata tttcaaaatc agataccata ccgtttaatg agattcataa     1200
ttcacagggt gcttttagagc atgaagcaaa ggtgtctaag atttctgaag agcaactgta     1260
ctacttgatg agtcgagggt tatctgaagc tgaagcaaca gaaatgattg ttatgggggt     1320
tgttgagccc tttagaaaag aattaccaat ggaatatgcg gtagagttaa atcgtttaat     1380
ttcctatgaa atggaagggt cagttgggtta a                                     1411

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<210> 232
<211> 468
<212> PRT
<213> Streptococcus agalactiae

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<400> 232

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Met His Ala Cys Arg Ser Thr Leu Glu Asp Leu Gly Glu Tyr Lys Phe
1              5              10              15

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Gly Phe His Asp Asp Val Lys Pro Ile Tyr Ser Thr Gly Lys Gly Leu
                20              25              30

```

```

Asn Glu Ala Val Ile Arg Glu Leu Ser Ala Ala Lys Gly Glu Pro Glu
35              40              45

```

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Trp Met Leu Asp Phe Arg Leu Lys Ser Leu Glu Thr Phe Asn Lys Met
50              55              60

```

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Pro Met Gln Thr Trp Gly Ala Asp Leu Ser Asp Ile Asp Phe Asp Asp
65              70              75              80

```

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Ile Ile Tyr Tyr Gln Lys Ala Ser Asp Lys Pro Ala Arg Asp Trp Asp
85              90              95

```

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Asp Val Pro Glu Lys Ile Lys Glu Thr Phe Glu Arg Ile Gly Ile Pro
100             105             110

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Glu	Ala	Glu	Arg	Ala	Tyr	Leu	Ala	Gly	Ala	Ser	Ala	Gln	Tyr	Glu	Ser	115	120	125
Glu	Val	Val	Tyr	His	Asn	Met	Lys	Glu	Glu	Tyr	Asp	Lys	Leu	Gly	Ile	130	135	140
Val	Phe	Thr	Asp	Thr	Asp	Ser	Ala	Leu	Lys	Glu	Tyr	Pro	Glu	Leu	Phe	145	150	155
Lys	Lys	Tyr	Phe	Ala	Lys	Leu	Val	Pro	Pro	Thr	Asp	Asn	Lys	Leu	Ala	165	170	175
Ala	Leu	Asn	Ser	Ala	Val	Trp	Ser	Gly	Gly	Thr	Phe	Ile	Tyr	Val	Pro	180	185	190
Lys	Gly	Val	Lys	Val	Asp	Ile	Pro	Leu	Gln	Thr	Tyr	Phe	Arg	Ile	Asn	195	200	205
Asn	Glu	Asn	Thr	Gly	Gln	Phe	Glu	Arg	Thr	Leu	Ile	Ile	Val	Asp	Glu	210	215	220
Gly	Ala	Ser	Val	His	Tyr	Val	Glu	Gly	Cys	Thr	Ala	Pro	Thr	Tyr	Ser	225	230	235
Ser	Asn	Ser	Leu	His	Ala	Ala	Ile	Val	Glu	Ile	Phe	Ala	Leu	Asp	Gly	245	250	255
Ala	Tyr	Met	Arg	Tyr	Thr	Thr	Ile	Gln	Asn	Trp	Ser	Asp	Asn	Val	Tyr	260	265	270
Asn	Leu	Val	Thr	Lys	Arg	Ala	Thr	Ala	Lys	Lys	Asp	Ala	Thr	Val	Glu	275	280	285
Trp	Ile	Asp	Gly	Asn	Leu	Gly	Ala	Lys	Thr	Thr	Met	Lys	Tyr	Pro	Ser	290	295	300
Val	Tyr	Leu	Asp	Gly	Glu	Gly	Ala	Arg	Gly	Thr	Met	Leu	Ser	Ile	Ala	305	310	315
Phe	Ala	Asn	Lys	Gly	Gln	His	Gln	Asp	Thr	Gly	Ala	Lys	Met	Ile	His	325	330	335
Asn	Ala	Pro	His	Thr	Ser	Ser	Ser	Ile	Val	Ser	Lys	Ser	Ile	Ala	Lys	340	345	350
Gly	Gly	Gly	Lys	Val	Asp	Tyr	Arg	Gly	Gln	Val	Thr	Phe	Asn	Lys	Asp	355	360	365
Ser	Lys	Lys	Ser	Val	Ser	His	Ile	Glu	Cys	Asp	Thr	Ile	Leu	Met	Asp	370	375	380
Asp	Ile	Ser	Lys	Ser	Asp	Thr	Ile	Pro	Phe	Asn	Glu	Ile	His	Asn	Ser	385	390	395
Gln	Val	Ala	Leu	Glu	His	Glu	Ala	Lys	Val	Ser	Lys	Ile	Ser	Glu	Glu	405	410	415

Gln Leu Tyr Tyr Leu Met Ser Arg Gly Leu Ser Glu Ala Glu Ala Thr  
 420 425 430

Glu Met Ile Val Met Gly Phe Val Glu Pro Phe Thr Lys Glu Leu Pro  
 435 440 445

Met Glu Tyr Ala Val Glu Leu Asn Arg Leu Ile Ser Tyr Glu Met Glu  
 450 455 460

Gly Ser Val Gly  
 465

<210> 233  
 <211> 261  
 <212> DNA  
 <213> Streptococcus agalactiae

<400> 233  
 atgatagaat tcttttctaa tatcagaaca gagattccgc agatgccttt acttatccat 60  
 agtttgattt tatctgtctt accttttctg atgtggctga ctttggttaa tagagataag 120  
 cctttgtata aaactatttg gagtatacctt ttaggacttc agttaattac gatttatact 180  
 tggtttttct gggcaaaatt gcctttatct gaaagtcttc ccctttacca ttgtcgaata 240  
 ggcatgtttg tcggtctctt a 261

<210> 234  
 <211> 87  
 <212> PRT  
 <213> Streptococcus agalactiae

<400> 234

Met Ile Glu Phe Phe Ser Asn Ile Arg Thr Glu Ile Pro Gln Met Pro  
 1 5 10 15

Leu Leu Ile His Ser Leu Ile Leu Ser Val Leu Pro Phe Leu Met Trp  
 20 25 30

Leu Thr Leu Val Asn Arg Asp Lys Pro Leu Tyr Lys Thr Ile Trp Ser  
 35 40 45

Ile Leu Leu Gly Leu Gln Leu Ile Thr Ile Tyr Thr Trp Phe Phe Trp  
 50 55 60

Ala Lys Leu Pro Leu Ser Glu Ser Leu Pro Leu Tyr His Cys Arg Ile  
 65 70 75 80

Gly Met Phe Val Gly Leu Leu  
 85

<210> 235  
 <211> 486



<212> DNA

<213> Streptococcus agalactiae

<400> 235

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aagcttgtgc aaagtattaa agagatagga ttagctaatac cgcatttatt agctgttgct      60
ccgacagggg caatcagtta tctttcttct tgtactccga gccttcaacc gggtgtatca      120
cctgtcgaag tacgcaagga aggagcactg gggaggggtt atgtagctgc ttataagatt      180
gatgcagata attatgtcta ctacaaaaaa ggagcttatg aagtgggata tgaggcgatt      240
atcaatattg cagctgccgc tcaaaaacac attgatcaag ctatttcgtt aacgcttttc      300
atgacagata aagcaactac gcgagattta aataaagcct atattcaagc atttaaacia      360
aaatgtgcct ctatttatta tgtacgagtg agacaggaca tcctagaagg tagcgagagt      420
tatgatgata tgctggatga tttcacttca tcggacttag aagactgtca atcctgcatg      480
atttaa                                          486
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<210> 236

<211> 161

<212> PRT

<213> Streptococcus agalactiae

<400> 236

```
Lys Leu Val Gln Ser Ile Lys Glu Ile Gly Leu Ala Asn Ala His Leu
1              5              10              15

Leu Ala Val Ala Pro Thr Gly Ser Ile Ser Tyr Leu Ser Ser Cys Thr
      20              25              30

Pro Ser Leu Gln Pro Val Val Ser Pro Val Glu Val Arg Lys Glu Gly
      35              40              45

Ala Leu Gly Arg Val Tyr Val Ala Ala Tyr Lys Ile Asp Ala Asp Asn
50 ,              55              60

Tyr Val Tyr Tyr Lys Lys Gly Ala Tyr Glu Val Gly Ser Glu Ala Ile
65              70              75              80

Ile Asn Ile Ala Ala Ala Ala Gln Lys His Ile Asp Gln Ala Ile Ser
      85              90              95

Leu Thr Leu Phe Met Thr Asp Gln Ala Thr Thr Arg Asp Leu Asn Lys
      100              105              110

Ala Tyr Ile Gln Ala Phe Lys Gln Lys Cys Ala Ser Ile Tyr Tyr Val
      115              120              125

Arg Val Arg Gln Asp Ile Leu Glu Gly Ser Glu Ser Tyr Asp Asp Met
      130              135              140
```

Leu Asp Asp Phe Thr Ser Ser Asp Leu Glu Asp Cys Gln Ser Cys Met  
 145 150 155 160

Ile

<210> 237  
 <211> 413  
 <212> DNA  
 <213> Streptococcus agalactiae

<400> 237  
 gtgaggacat atattacaaa cttgaatgga cattcaatca ctagtacagc acaaatagct 60  
 caaaacatgg taacagatat agcagtaagc ttaggttttc gtgagctggg aatacattct 120  
 tatccgattg atactgattc tcctgaggaa atgagtaagc gtttagatgg aatctgttcc 180  
 ggacttagaa aaaatgatat tgtcatatth cagacaccta catggaacac tacaactttt 240  
 gatgaaaaat tatttcacaa attaaaaata tttggtgtaa agattgttat ttttatacat 300  
 gatgttgtac cgctaattgtt tgatggaaat ttttatttga tggatagaac tatagcttat 360  
 tataatgaag cagatgttta atagccccta gtcaagcaat ggtcgataag ctt 413

<210> 238  
 <211> 138  
 <212> PRT  
 <213> Streptococcus agalactiae

<400> 238  
 Met Arg Thr Tyr Ile Thr Asn Leu Asn Gly His Ser Ile Thr Ser Thr  
 1 5 10 15  
 Ala Gln Ile Ala Gln Asn Met Val Thr Asp Ile Ala Val Ser Leu Gly  
 20 25 30  
 Phe Arg Glu Leu Gly Ile His Ser Tyr Pro Ile Asp Thr Asp Ser Pro  
 35 40 45  
 Glu Glu Met Ser Lys Arg Leu Asp Gly Ile Cys Ser Gly Leu Arg Lys  
 50 55 60  
 Asn Asp Ile Val Ile Phe Gln Thr Pro Thr Trp Asn Thr Thr Thr Phe  
 65 70 75 80  
 Asp Glu Lys Leu Phe His Lys Leu Lys Ile Phe Gly Val Lys Ile Val  
 85 90 95  
 Ile Phe Ile His Asp Val Val Pro Leu Met Phe Asp Gly Asn Phe Tyr  
 100 105 110  
 Leu Met Asp Arg Thr Ile Ala Tyr Tyr Asn Glu Ala Asp Val Leu Ile  
 115 120 125

Ala Pro Ser Gln Ala Met Val Asp Lys Leu  
 130 135

<210> 239  
 <211> 261  
 <212> DNA  
 <213> Streptococcus agalactiae

<400> 239  
 catggaaatg aagttgatga tggtattaga agggcatttg aatataatca ccttatcttt 60  
 gcttttgata atacctgtca taacagagag ttagtattag atagcaatat catttctcac 120  
 acaacctgtg aacaattgat aaatttaatg aaaaatttat caggctccat tatgtatttg 180  
 ctagagcaac aaagagaaca aacaagtaat gaaacaaaag agcggtataa agaaatatta 240  
 ggaggggatg gaaatgccta a 261

<210> 240  
 <211> 86  
 <212> PRT  
 <213> Streptococcus agalactiae

<400> 240

His Gly Asn Glu Val Asp Asp Val Ile Arg Arg Ala Phe Glu Tyr Asn  
 1 5 10 15

His Leu Ile Phe Ala Phe Asp Asn Thr Cys His Asn Arg Glu Leu Val  
 20 25 30

Leu Asp Ser Asn Ile Ile Ser His Thr Thr Cys Glu Gln Leu Ile Asn  
 35 40 45

Leu Met Lys Asn Leu Ser Gly Ser Ile Met Tyr Leu Leu Glu Gln Gln  
 50 55 60

Arg Glu Gln Thr Ser Asn Glu Thr Lys Glu Arg Tyr Lys Glu Ile Leu  
 65 70 75 80

Gly Gly Tyr Gly Asn Ala  
 85

<210> 241  
 <211> 312  
 <212> DNA  
 <213> Streptococcus agalactiae

<400> 241  
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 ttttagtatgt ctaaagaaga gttgtcatat ttaccggtta ttaaactttt taagaatcaa 120  
 ggtgtataca acggcttgat tggtctattc ctcttttatg gggttatatat ttcacagaat 180

caagaaattg tagctatttt tttaatcaat gtgttgctag ttgctgttta tgggtgctttg 240  
acagttgata aaaaaatctt attaaaacag ggtgggttac ctatattagc tcttttaaca 300  
ttcttatttt aa 312

<210> 242  
<211> 103  
<212> PRT  
<213> Streptococcus agalactiae  
<400> 242

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1 5 10 15  
Thr Gly Lys Ile Phe Ser Met Ser Lys Glu Glu Leu Ser Tyr Leu Pro  
20 25 30  
Val Ile Lys Leu Phe Lys Asn Gln Gly Val Tyr Asn Gly Leu Ile Gly  
35 40 45  
Leu Phe Leu Leu Tyr Gly Leu Tyr Ile Ser Gln Asn Gln Glu Ile Val  
50 55 60  
Ala Ile Phe Leu Ile Asn Val Leu Leu Val Ala Val Tyr Gly Ala Leu  
65 70 75 80  
Thr Val Asp Lys Lys Ile Leu Leu Lys Gln Gly Gly Leu Pro Ile Leu  
85 90 95  
Ala Leu Leu Thr Phe Leu Phe  
100

<210> 243  
<211> 588  
<212> DNA  
<213> Streptococcus agalactiae

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gtggctgaac atcacggtgt taaggcattc agtattagca atccagaatt aatgataatg 180  
catttggtta accagactaa atctatcaaa attggctctg gaggtataat gcctctgcac 240  
tatagtagtt ttaaactcgc ggagactctc aagacattag agacatgtca tccgaatcga 300  
gtaagtattg gtttaggaaa ttcactaggg acagttaaag tttcaaagtc acttcgtagc 360  
ttacataaag cacatgatta cgaagaggta ctggaggaat tgaagtcatg gcttattgat 420  
gaatcatcca gtaaggaacc attagttcaa cgcactcttt ctagcttccc agacttatat 480

gtgttgggga gtggtcaaaa atcagcttat ttagcggcta aacttggctt aggctttacc 540  
 ttcggtgttt ttccttttat ggacaaagac ccattgacag aagctaaa 588

<210> 244  
 <211> 196  
 <212> PRT  
 <213> Streptococcus agalactiae

<400> 244

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			20					25					30		
Gln	Leu	Gly	Tyr	His	Gln	Phe	Trp	Val	Ala	Glu	His	His	Gly	Val	Lys
		35					40					45			
Ala	Phe	Ser	Ile	Ser	Asn	Pro	Glu	Leu	Met	Ile	Met	His	Leu	Ala	Asn
	50					55					60				
Gln	Thr	Lys	Ser	Ile	Lys	Ile	Gly	Ser	Gly	Gly	Ile	Met	Pro	Leu	His
65					70					75					80
Tyr	Ser	Ser	Phe	Lys	Leu	Ala	Glu	Thr	Leu	Lys	Thr	Leu	Glu	Thr	Cys
			85						90					95	
His	Pro	Asn	Arg	Val	Ser	Ile	Gly	Leu	Gly	Asn	Ser	Leu	Gly	Thr	Val
			100					105					110		
Lys	Val	Ser	Asn	Ala	Leu	Arg	Ser	Leu	His	Lys	Ala	His	Asp	Tyr	Glu
		115					120					125			
Glu	Val	Leu	Glu	Glu	Leu	Lys	Ser	Trp	Leu	Ile	Asp	Glu	Ser	Ser	Ser
	130					135					140				
Lys	Glu	Pro	Leu	Val	Gln	Pro	Thr	Leu	Ser	Ser	Phe	Pro	Asp	Leu	Tyr
145					150					155					160
Val	Leu	Gly	Ser	Gly	Gln	Lys	Ser	Ala	Tyr	Leu	Ala	Ala	Lys	Leu	Gly
				165					170					175	
Leu	Gly	Phe	Thr	Phe	Gly	Val	Phe	Pro	Phe	Met	Asp	Lys	Asp	Pro	Leu
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Thr	Glu	Ala	Lys												
			195												

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<220>  
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<212> DNA  
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<220>  
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ttagcggata acaatttcac ac 82

<210> 251  
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<220>  
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gtgtgaaatt gttatccgct a 81

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<212> DNA  
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<220>  
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<400> 252  
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<210> 253  
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<210> 254  
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<212> DNA  
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<400> 254

tcgatatgttg tgtggaattg tg 22

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<220>  
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<211> 43  
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<220>  
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<210> 258  
<211> 45  
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<220>  
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<210> 259  
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<400> 259  
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24

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10

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<210> 263  
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<220>  
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<220>  
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<400> 273

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<212> DNA  
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<220>  
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<400> 274  
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<220>  
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39

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<220>  
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<400> 276  
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39